Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone

Vol. XVIII CHICAGO, SATURDAY, NOVEMBER 20, 1909 No. 21

PUBLISHED EVERY SATURDAY BY THE

Telephony Publishing Company

Monadnock Block, Chicago

Telephone Harrison 2951

H. B. McMeal, President F. S. Kenfield, 1st Vice-President
W. H. Graffis, 2d Vice-President H. D. Fargo, Secretary-Treasurer

Edited by H. B. McMeal and Franklin H. Reed

The present publication comprises

Vol. 57	The Telephone	No. 21
Vol. 34	Telephone Magazine	No. 21
Vol. 20	American Telephone Journal	No. 21
Vol. 18	Sound Waves	No. 21
Vol. 18.	Telephony	No. 21

TERMS OF SUBSCRIPTION:

United States, Cuba and Mexico.....per year, $3.00
Canada 4.00
Other Foreign Countries within the Postal Union..... 5.00

NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements accepted up to noon of Monday for the paper dated Saturday of the same week.

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1879.

CHICAGO, ILL., SATURDAY, NOVEMBER 20, 1909.

CONTENTS.

Editorial 516
The Strength of the Independents. By B. G. Hubbell, President Federal Telephone & Telegraph Co.... 517
Ashtabula—The First Automanual Exchange. By John Grant 518
Clearing Subscribers' Accounts Through the Bank..... 527
The Illinois Convention..... 528
The Telephone in the Courts. By A. H. McMillan.. 537
News of the Week..... 538
Patents. By Max W. Zabel..... 541
With the Manufacturers..... 542
Condensed News Reports.....545, 546
At the Editor's Desk..... 547

An Appeal to the President.

If President Taft intends to carry out the Roosevelt policy of curbing the trust evil, he will find no better place to begin than with the American Telephone and Telegraph Company and the Western Union Telegraph Company. These companies are attempting to form a billion-dollar combination for the control of the telephone and telegraph business of the country. The Mackay Companies, which own the Postal Telegraph Company, have six times as heavy an interest in the A. T. & T. Co. as any other stockholder. The fact that the absorption of the Western Union by the Bell company will not create an absolute monopoly of the country's wire facilities is not the point at issue. If the laws permit of billion-dollar combinations in restraint of trade, then the laws should be changed at the earliest possible date. If our anti-trust laws are sound then they should be enforced. Isn't it about time the people awakened to the real conditions in Wall street? What branch of industry have we left that is free from the clutches of the Wall street manipulators? Transportation, steel, oil, sugar, coffee, tobacco, copper, ice, milk, gas, etcetera, and, now communication. Is it not time the people of these United States declared themselves?

So far as the Independent telephone movement is concerned, it was never in better condition, and from all indications the coming year will see greater development, better organization and a more firmly intrenched industry than ever before. The Independents represent the people, and, for the people, should carry the fight against the proposed billion-dollar combination, if necessary, to the President of the United States.

Through this editorial, and by direct letter, TELEPHONY is placing the matter before the Attorney General and the Fresident in the hope that some action may be taken by the government. Independents, through their organizations, should do likewise. An appeal to the chief executive from the people should receive consideration, and bring results.

Where the Stop Watch is a Joke.

Does anyone want to buy a stop watch? There's a man in Cleveland who will sell his, cheap, next week. It has been the aid to a merry jest on unsuspecting visitors quite long enough, and the time has come to lay it on the shelf. Read this carefully—it's an exposure.

When you visit C. H. North, in his office, he just naturally can't keep from telling you how fast that girl over at Ash-

tabula slips her calls through. You listen for a while, and get interested. In fact, you begin to wonder. So, just before you start for the train, it is in order to casually remark that you used to like to hold a clock on a bicycle race, or a telephone call, or something like that, once in a while, but have left your stop watch at home. North provides one. He acts as if he had been expecting to, in fact. We believe he'd coax a man to take one if he had to—only they always ask.

You get into the exchange at Ashtabula, look things over a bit—hear some explanations—and then gaze at the operator. It is fascinating. Number—Click-click-click—Number—click-click—like that. Your fingers begin to itch to snap that clock.

Mr. North is a very polite man—he is looking somewhere else. The exchange employes are polite, too. You're out of practice—missed that first one badly—try again—finally attempt to beat the pistol, so to speak—and still you are landing in the middle of the next call somewhere. Just like that first flock of grouse you tried to shoot up, as a boy, and kept the muzzle of your gun in wild pursuit of one after another, as they boomed up, until the last one had dodged unharmed behind a convenient tree.

And maybe you think it's been your fault, until you start to hand the watch back to North. He tries, but can't keep the twinkle out of his eyes. Then comes the explosion. The automanual gives rapid service, sure enough; and if you still want to be scientific you can say it is so rapid that the percentage of error in the operation of the human nervous and muscular systems is so high as to invalidate a stop-watch test—but the best way to find out about the speed is to let them work the stop watch joke on—somebody else.

In the Automanual we have another notable invention to the credit of competition in the manufacturing branch of the Independent industry. The patent situation prevents its manufacturers from making a complete exposition of circuits, and all the provisions which would be opened up by an installation in a large city. But people who visit the Ashtabula Harbor system can see simplified operating that is fascinating for its speed—and what seems to correspond to the last word in electromagnetic mechanism with all the lag taken out of its motion. Examination reveals a simplicity of construction—through the repetition of a remarkably small number of fundamental parts—which indicates the working of highly trained analytical mechanical ability.

Of course, the operator will occasionally hear and set up wrong numbers; although we didn't see it happen, we suspect that the switches will not infallibly operate with perfect precision, since they are a part of the material universe. But the Automanual represents the ingenious working out of a big idea. And it has features which will make it a field for investigation, not only by the equipment engineer and the service expert, but by the outside plant man as well.

The original conception of the system, by Edward E. Clement, sets a mark for future patent attorneys, even though they may have previously acquired, like him, a high reputation for ability in their chosen field; and in the mechanical embodiment of the system Mr. North has shown to what good use can be turned the knowledge gained in many years spent as a manufacturer, making good equipment.

The Practical Conference.

Readers of TELEPHONY are taking a keen interest in the forthcoming Practical Conference, which has been scheduled as an important feature of the International convention early in December. The more who show their interest in a practical way by contributing results of their own experience, the better it will be. We hope that no temporary inconvenience will be allowed to stand in the way, for anyone, of preparing a contribution, and forwarding it to the chairman of the program committee, Mr. G. R. Johnston, of Columbus, Ohio.

Reference to recent issues of TELEPHONY will suggest an ample list of topics which may be covered.

The Strength of the Independents.

(*Concluded from page 517.*)

Prior to 1902, at the time the Independent company started in the city of Buffalo, the Bell company had operated for nearly twenty-five years, and at that time had connected to its lines about 5,600 telephones. Its rates for service were on a message basis and varied from five cents per message to as high as ten cents. There was public indignation at its lack of attention to the public's growing necessities and, after tiring of its many statements that it was supplying all the people who needed telephone service with as good service as could be given, a number of prominent interests in this city, in actual desperation, organized an Independent telephone company and built an up-to-date plant with a complete underground and cable system, and with the latest improvements in apparatus.

The supporters of the Independent company felt that, judging from the Bell's plan of operation, it might be possible to secure in the neighborhood of 7,500 or 10,000 subscribers. To-day, after seven years of operation, the Independent company has in excess of 17,000 subscribers, and the Bell company, spurred on by this active competition, has extended its plant from 5,600 subscribers seven years ago to 10,000 at the present time.

The Bell company has spent thousands and thousands of dollars in advertising in Buffalo papers that it can give good service and that its rates are cheap, and recently it has begun to give service away as an actual demonstration of its value. All this time the Independent company sits complacently by, taking in more new business than ever before. Why? *Because it has many more subscribers connected exclusively to its system, who cannot be reached at any price or in any manner by the Bell company, than that company had in its entire system before the advent of the Independent company.*

This is the great strength of the Independent telephone business. This position of strength is easily maintained by normal attention to the business and service, and so there should be no fear of the bluster (for that is all it is) of the Bell company in trying to recover the ground it has so completely lost during the past few years.

Independent telephony is a good business. The product is manufactured night and day, without cessation. It is sold for cash in advance to a very large number of people whose desire for the service is so great, and whose financial debt to the company is of so small an amount as to preclude the desire to defeat or defraud the company in payment of accounts, and it is a business that pyramids in importance as it grows, making it more necessary for the subscriber to stay with the organization and more necessary for the man who is not a subscriber to become one.

The Strength of the Independents

Business Founded on a Public Necessity—Good Will of Subscribers Nullifies Vicious Misrepresentation of Competitors—High Proportions of Service to Exclusive Users, Under Contract

By B. G. Hubbell

President, Federal Telephone & Telegraph Company.

An absolute public need of its service brought Independent telephony into being more than fifteen years ago. It has developed in a healthy, practical way until to-day the name represents one of the strongest commercial interests of this country. As an industry, it is strong because it supplies a necessity—communication. And as a business it is firmer than any founded upon other needs—as even for food and clothing because the users of Independent telephones are for the most part exclusive customers, bound by contracts.

The only arguments against the value and necessity of the Independent telephone have been theoretical, brought forth by the Bell company, and used by it continuously from the day the first Independent telephone company was started.

These arguments had no merit when they were first introduced, and certainly are not worthy of consideration to-day, after the Independent telephone has proven its necessity. They would not be printed or considered, except for the sensational maner in which it has pleased the Bell company to provide for their publication.

Mr. B. G. Hubbell

Commercial organizations in general conduct their businesses within ethical lines, by doing such things as may be necessary to introduce their wares—always careful, however, never to speak ill of their legitimate competitors. But the Bell company endeavors to cover up its insufficiencies by vilifying and misrepresenting its competitors in a dastardly and wicked manner, the boldness of which has never been equalled in this world's history. The weakness of its arguments is always apparent, and their continued reiteration is rapidly turning the public mind against them.

To my mind, it would have been impossible to develop this great business with $400,000,000 invested in 4,000,000 telephones serving 20,000,000 people (an average of five persons to an instrument) unless there had been some great public demand for its service.

If I were debating this subject, I would go this far and stop, feeling that I had won my case. But, for the benefit of the skeptical, if there be any remaining, it may not be amiss to elaborate somewhat on the unique business position occupied by the Independent telephone business.

In 1895 there was a very perceptible increase in commerce, and there was an irrepressible and insistent demand for a more extensive telephone service than was then furnished by the Bell companies. This demand covered all sections of the country—not only large cities but the smaller ones, villages and rural communities, which had, up to that time, no telephone service at all. At that time the Bell company had less than 240,000 telephones in service in the United States and was totally unprepared in organization or finances, to take care of this tremendous increasing demand for means of communication over telephone wires.

Because of this condition, the Independent telephone was brought into existence through sheer force of dire necessity. The majority of the Independent companies now in existence were constructed by local capital, in their respective communities, simply because there was at that time no other way to secure the telephone service so much needed.

With this condition existing, over which there is absolutely no dispute, even from the Bell company, it is easy to see there was a broad and virgin field for the development of Independent service, and, with a moment's consideration, it is equally easy to see that these Independent companies, localized in their control and financed and officered by prominent men in each of the communities in which they were operating, were in a better position to secure this new business than the older company, officered and financed at great distances from the local fields of operation.

The Independent companies once started were not slow in preempting this heretofore unoccupied field, and were able to secure a large and exceedingly desirable part of the telephone business, which they have uniformly been able to hold. To-day, notwithstanding the desperate efforts of the Bell company to dislodge them, the Independent telephone interests occupy an impregnable position—absolutely beyond fear of the most vicious attack of the Bell company, *in the fact that they own the exclusive control of the connections to a very considerable proportion of the telephone using public.*

The competition between the Bell company and the Independents, because of these exclusive connections, is no more violent than the competition between the meat market and the grocery store—they both sell commodities to be used for the same general purposes, but the grocer does not fear the competition of the meat man because he happens to reduce his price on meat. The man who wants potatoes is still going to pay the grocer a reasonable price for them, no matter how much of a cut the meat man makes.

And likewise the man who wants to telephone to John Smith (an exclusive Independent subscriber) is going to pay a fair price for that privilege to the Independent company, even though the Bell company may offer him a connection to John Jones at less money.

Competition is keen for the subscription of the man who does not have the service of either company, but a subscriber once obtained pays the regular rates, even though he later takes the service of the other company.

I know of no better way to illustrate the points which I wish to make than by citing the situation at Buffalo, N. Y.

(Concluded on page 516.)

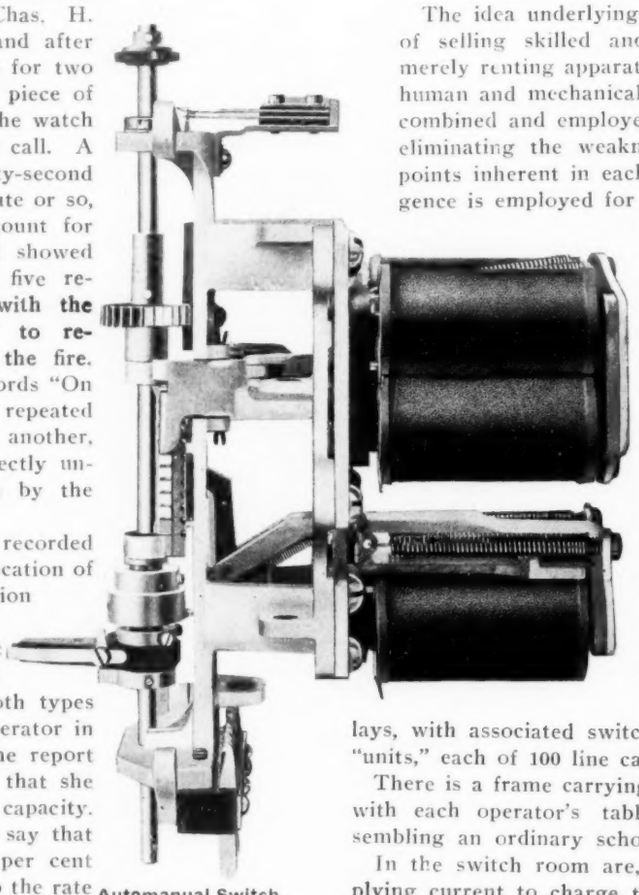
Ashtabula—The First Automanual Exchange

By John Grant

On the afternoon of Oct. 29 fire broke out in a building on Sibley street, Ashtabula Harbor. The alarm was given through the telephone exchange—equipped with the recently developed Automanual apparatus—where some very interesting things happened. The operator, on duty alone, received the report from a highly excited woman, who did not give either the location of the fire or her telephone. Switches were locked up by the operator and an electrician traced through the series of operated relays and selectors, located the calling number, found by the office records what street the telephone was on, and an instant later the alarm was sounding; then the fun began. The operator was fairly peppered with calls. A representative of TELEPHONY, who happened to be visiting the exchange with Mr. Chas. H. North, had a stop watch, and after watching the operator work for two or three minutes, grabbed a piece of paper and a pencil, started the watch and made a mark for every call. A count was taken for one sixty-second period, and, after half a minute or so, for another minute. The count for the first one minute period showed 10 calls for numbers, and five responses by the operator, with the words, "On Sibley street," to requests for the location of the fire. For one of these five, the words "On Sibley street" had to be repeated three times, and twice for another, because they were not perfectly understood when first spoken by the operator.

The second minute recorded showed seven calls for the location of the fire, and 15 for connection to other telephones.

Readings of an automatic call counter by an employe showed that 120 calls of both types had been handled by the operator in the six minutes following the report of fire, and it was apparent that she was not working at her full capacity. It would be conservative to say that she could have handled 15 per cent more, and could have kept up the rate she maintained over an extended period.



Automanual Switch.

The pen on the Bristol recording ammeter record jumped from 5 to 10 on the scale during the rush of calls.

CLASS OF SERVICE REQUIRED.

The city of Ashtabula has a population of about 20,000 and is divided into the main town, situated about four miles from the lake, and the Harbor situated at the mouth of the Ashtabula River on the lake. The local population of the Harbor where the Automanual has been installed for the first time to give commercial service, is about 5,000.

The Harbor has the usual elements to be reckoned with in furnishing telephone service to a place of this size—residences, supply dealers, furniture, dry goods, drug and general stores, doctors, lawyers, etc. In addition the exchange here has to meet the service requirements of the shipping interests. Ashtabula Harbor is said to handle the heaviest ore traffic of any port in the world; transshipment being made here to railroads, which, in their great terminals, have the facilities required for handling practically all the ore sent into the Pittsburg district from the lakes. So there is big business to look out for, and this of a kind, since it is dependent upon shipping and transportation, which is liable to produce sudden heavy increases in the exchange load at wholly unexpected times. The ability of the Automanual system to fulfill these demands is indicated by a detailed examination of the system and the service it has given in the six months it has been in use by the public.

FUNDAMENTAL IDEA WHICH PRODUCED THE SYSTEM.

The idea underlying the Automanual system is that of selling skilled and efficient service, rather than merely renting apparatus, and in working out that idea human and mechanical agencies are intended to be so combined and employed as to work at high efficiency, eliminating the weaknesses and retaining the strong points inherent in each. An operator's trained intelligence is employed for the reception of the call and to start the switching operation, while, once it is started, the mechanism itself relieves her of all attention to detail and necessity for time-consuming movements.

THE APPARATUS FURNISHED.

The subscriber's station is equipped with the simplest present form of equipment, namely a standard common battery telephone. At the central office lines pass through a main distributing frame, where protective apparatus is installed, and cross-wiring connects each cable pair to line and cut-off relays corresponding to the subscriber's number. The relays, with associated switches, are mounted in frames, or "units," each of 100 line capacity, fully equipped.

There is a frame carrying switching apparatus associated with each operator's table. The operator's table, resembling an ordinary school desk, is in a separate room.

In the switch room are, in addition, machines for supplying current to charge the storage battery, and to supply current for operating the selecting mechanism; also a North synchromonic converter, furnishing ringing current; a power switchboard and a combined wire chief's and information desk, of the same size as an operator's desk; and that is all. Storage batteries are, of course, installed in a separate room.

THE OPERATOR'S EQUIPMENT.

The operator's equipment is simplicity itself. At Ashtabula Harbor two positions are provided. Each is equipped with three sets of numbered keys, almost identical in appearance and method of manipulation with those of the ordinary adding machine. Each set of keys has, in addition, lamp signals, three in number, a listening button and a starting button.

Each complete set of keys for setting up the numbers has three vertical rows of buttons, numbered from 1

through 9 to 0, and an additional row of four buttons, which are used for selective ringing. The keys in each strip are mechanically similar to the selective ringing keys in ordinary use, being interlocking, so that when a number is set up all keys previously depressed are automatically released. Connected to these key sets is a power-driven impulse sending machine from which groups of impulses are taken corresponding to the numbers on the keys depressed. From each key set an operator's trunk is taken to a switch set, by which it may be connected to a selector trunk and calling line.

EQUIPMENT FOR SUBSCRIBERS' LINES.

The subscribers' metallic circuits come in to the exchange building and after passing through the usual main frame terminals and protectors are ended upon the line and cut-off relays. Local trunks, or link circuits, between the primary selector and first selector switches are provided with condensers, and sleeve and tip relays bridged on the main battery, so that the circuit conditions are identical with those in standard common battery manual boards. All the switches and relays are mounted upon iron racks, in a room apart from the operating room.

HOW A CALL IS HANDLED.

The operation of this equipment is as follows:

When a subscriber calls, by taking down his receiver, his line is immediately and automatically connected to an operator's idle key set. The lamp in front of the key set then lights, indicating a call. The operator comes in on the line by depressing her listening key, gets the number and depresses the corresponding buttons, thereby determining the number of impulses to be sent to the selector and connector switches, to cause them to make the desired connection. She repeats this number to the calling subscriber as she sets it up, and if correct, presses the starting button, then her work on that call is done. The sending machine transmits the pre-determined impulses to the switches, which then select, test and ring the wanted line automatically. As soon as this line is selected, however, the key set is automatically released and is ready for another call.

SWITCHING APPARATUS.

Aside from standard equipment, such as the power plant, protecting, and ringing devices, there are but five different pieces of special apparatus required to complete an Automanual installation:

First: The impulse, or sending machine.

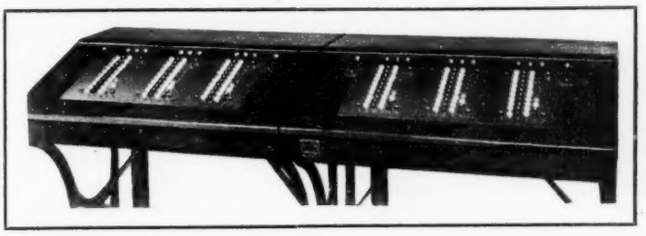
Second: The operators' keys for setting up numbers.

Third: The Automanual relay.

Fourth: The one hundred point, two motion switch.

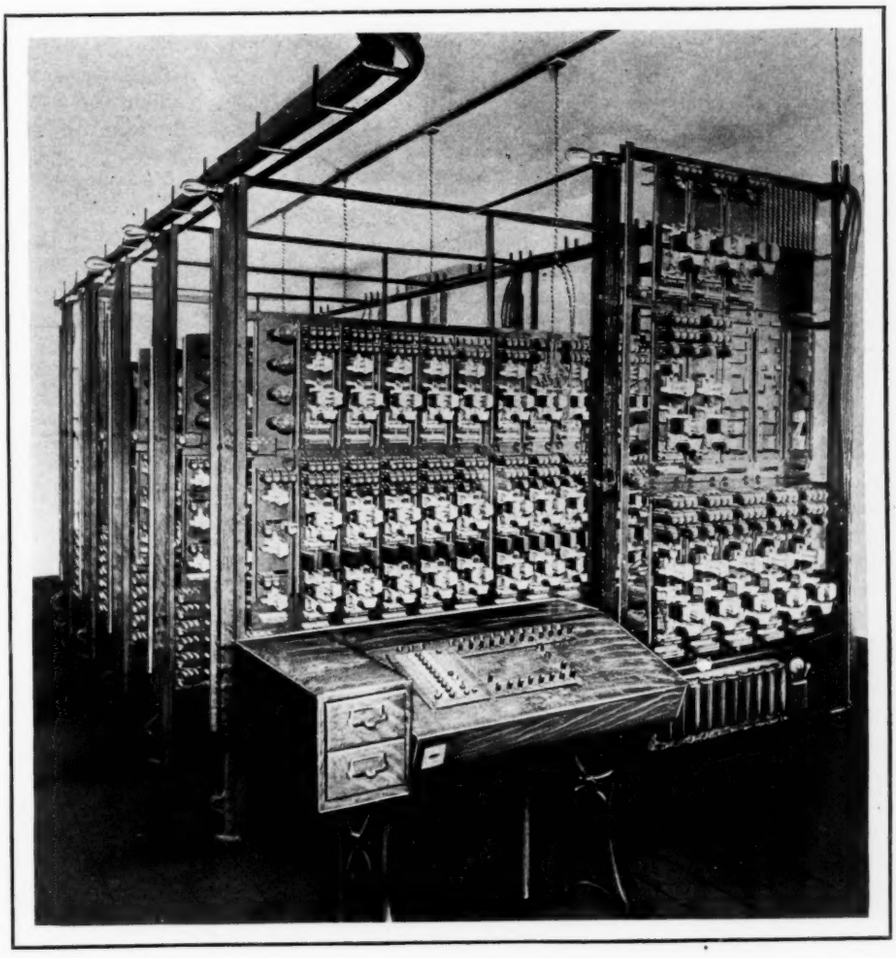
Fifth: The twenty point, one motion switch.

An examination of the sending machine reveals a simple but well made device, consisting of a drum upon which are placed cams arranged to furnish to associated brushes electrical impulses in correspondence with the keys depressed by the operator. It is driven by a small motor which draws current from the storage batteries. This sending machine is common to the entire system, and in itself governs the selecting for all lines. No sending machines are required at branch exchanges, but only at the point where operators are located.



The switching racks themselves, at first glance, to the uninitiated, appear complicated.

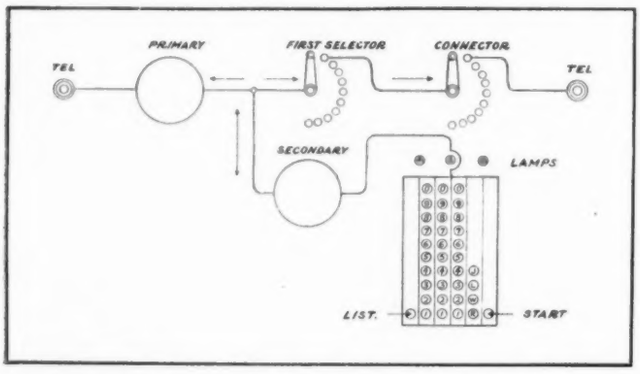
The racks are of open steel construction and each rack carries the line and cut-off relays, together with the necessary trunking apparatus for one hundred lines. But what first appears as complication, upon analysis resolves itself into merely such necessary duplication as the number of lines served requires, of but three pieces of apparatus. These three pieces of apparatus consist of a one hundred point, two motion switch; a twenty point, one motion switch and a relay.



All one hundred point switches are alike, all twenty point switches are alike, all relays are alike mechanically, and each part of each particular piece of apparatus is interchangeable with every other part of similar character.

Each unit frame carrying the apparatus for 100 lines is entirely self contained. Its dimensions are as follows: 6 feet 3 inches long, 7 feet 4 inches high and 8½ inches in depth. It weighs six hundred pounds, or six pounds per line. They are placed upon three foot centers which allows ample space for even a corpulent individual to work conveniently between units. In cases of limited floor space this could with safety be slightly reduced, and in no event would there ever be any occasion for increasing it.

A vertically mounted terminal rack is carried upon each end of the frame, one for the purpose of connecting the cable to the main distributing board, and the other to unite the interconnecting trunks between units. These units are wired up complete, switches and relays being



Routing of a Call Through the Automanual Equipment.

mounted thereon and tested out before shipment from the factory. When packed for shipment each frame, together with its enclosing case, will pass through any standard door and can be placed in permanent position before removing the case, which eliminates any chance for injury in shipping and handling.

The only work of installation remaining is to solder in the cables above referred to and the units are then ready for operation, provided, of course, that power plant and main distributing board, ringing device, etc., are in place. The equipment for the operating room is so simple and the connecting wires so few that the operator's equipment for a five thousand line installation can easily be installed in one day by two men.

The installation of additional units in an existing Automanual system is accomplished without disturbing or in any manner interfering with the units already installed, and as all units are exactly alike no confusion can result when ordering additions.

This removes the necessity in a new installation of contracting for any more units than the immediate business requirements demand, as they can be obtained from stock at the factory upon short notice, at any time.

ECONOMIES IN SUBDIVISION OF THE AUTOMANUAL SYSTEM.

In an Automanual system, while operators are used for receiving calls, the mechanism does away with any necessity for "B," or trunk operators. Yet an exchange system can be subdivided practically without limit into centers and sub-centers, served by distributing automatic systems where the branch exchanges are to be, each controlled from one main operating system or clearing house. This practice of subdivision will be effective, to a certain material extent, in reducing cable costs.

DETAILS OF THE ASHTABULA EXCHANGE.

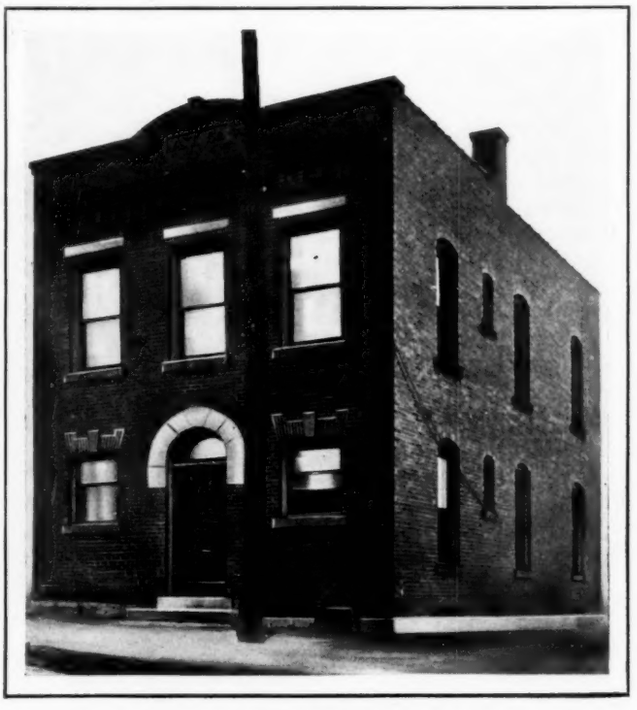
Prior to the present installation, telephone service in Ashtabula and the Harbor had been given by two North Electric manual switchboards, that at the main exchange in the town being common battery multiple with twelve hundred lines installed, and that at the Harbor a magneto transfer board with approximately three hundred and fifty lines. The two boards were connected by open wire leads, there being ten trunks each way. These were destroyed in the sleet storm of March, 1909, and were replaced just prior to the present installation by aerial cable.

The service at the Harbor required seven operators for a night and day shift, while the Main exchange, to accomplish the same service, employed thirty, making a total for both exchanges of thirty-seven operators. The number of subscribers served at the Harbor exchange prior to the cut over to Automanual was four hundred and twenty-four, and the number at the Main exchange is nineteen hundred and sixteen. In the busy hours three operators were kept on duty at the Harbor.

It was considered by The North Electric Company that the conditions thus stated were quite favorable for a thorough demonstration of the possibilities of the Automanual, and they contracted to re-equip both the Main and Harbor exchanges, with the idea of starting first at the Harbor with local operators, and after that was successfully working, equipping the Main exchange so as to centralize all the operators therein, leaving the Harbor practically an automatic branch. By following this plan, additional economies will be effected, in that the day load at the Harbor will only call for one additional operator at the Main exchange, and the combined night load will be handled by a single operator at Main.

The present installation at the Harbor, which represents the simplest embodiment of the Automanual system, comprises five units of one hundred lines each, each line adapted for either single or party line service, thus insuring both flexibility and load capacity without the loss of any group or groups of numbers.

Each unit is complete in itself, requiring the use of no



Economically Constructed Brick Building at Ashtabula Harbor, in which is Housed the Automanual Exchange of the Ashtabula Telephone Company.

outside apparatus for the completion of a call, having the line and cut-off relays mounted upon angle plates at the bottom, with the necessary trunk switches and relays above.

These units are assembled, wired and tested out in the factory and the only installation required upon the ground

is the connecting of the line and trunk cables, together with the battery supply and ringing current wires.

In this system the subscribers have entire control of their own connections, and so are secure from interruption, because it is impossible for any of the operators to cut in or secure access to a line or trunk after a connection is established. To clear out, or make a re-call the subscribers simply hang up their receivers, when switches are automatically restored.

It will be at once apparent that the location of the operating room adjacent to the switches is a matter of choice and not of necessity, because the only wires having direct access to the operators' keys are their own secondary trunk wires, which can be made of any length desired. Thus it is possible to carry these trunks from a common point to more than one switching center, so that the operators can be centralized.

Since the operators' trunks are only in use, for each call, during the brief time necessary to answer and send the impulses required to make connection, they are at maximum efficiency all the time, and the number required is relatively very small, figuring in large exchanges at less than one per cent. Subscribers' connecting trunks do not necessarily pass to the operating center, but directly between the various switching centers, and are laid out solely with an eye to traffic requirements between the centers and the groups of subscribers which they serve. Should the operators for convenience be located at a switching center, however, then, of course, their secondary trunks would be distributed along with the main connecting trunks, and may be in the same cable. As they constitute in effect automatic order wires, they can be handled in the ordinary way as stated.

With the foregoing arrangement it will now be understood that when the main exchange in the town of Ashtabula is fully equipped, the present operators' positions at the Harbor can be put out of commission, all calls from the Harbor subscribers going to the operators at the Main exchange through their secondary trunks or order wires. In any branch as important as this, however, it would be unwise to dispense entirely with local operating means, hence this will probably be kept at the Harbor indefinitely for use in case of emergency, such as would arise for example through accident to the trunk cable, or a fire in the Main exchange. In a larger system it would of course be possible to get the same protection without local operating equipments, by providing auxiliary main centers or operating rooms either for groups or for all of the switching centers.

There are no rural lines terminating at the Harbor and no toll lines, as all service of this character is handled from the Main exchange.

When the cut-over is made at the Main, the rural lines will be handled in the same manner as local lines, with the added features of furnishing ten party selective service through the use of five frequencies, and ringing to ground through condensers on both sides of the line.

Toll business will be handled as at present through a local toll board.

The wire chief's desk, in addition to the usual testing circuits and instruments, is also equipped with a set of operator's keys.

The power plant consists of a duplicate set of storage batteries of one hundred and twenty ampere hour capacity each, and each set consists of twenty cells. Thus the system is what is known as a forty volt system.

A direct current charging set and power switchboard complete this outfit.

Ringing is accomplished through the medium of a duplicate set of synchromonic converters, supplying current at the frequencies of 30, 42, 54 and 66 cycles, and four party selective service is furnished.

An examination of the accompanying floor plan of Ashtabula Harbor will demonstrate the economies as regards floor space when a room 19 feet 6 inches wide by a little under 23 feet long will contain all the equipment except

Front View of Two Operators' Positions in a Room 6x7 Feet at Ashtabula Harbor.

storage batteries, for one thousand lines. Two operators occupy a space six by seven feet in size.

The storage batteries are in the basement, and the second floor was fitted up for living rooms, although at present occupied by a reserve stock of telephones.

MECHANICAL DETAILS.

The apparatus in which the Automanual is embodied, to quote one prominent telephone engineer "is in a class by itself." Its designs have been most carefully and thoroughly worked out along the lines of simplicity, durability and efficiency.

The operator's keys as will be observed from the illustration are similar in design to the well known forms of indicating party line keys. All keys are alike, and the only function performed by any key is to close a single contact between two springs.

The cost of each operator's equipment is such an infinitesimal part of the whole as to leave no reason for economizing in this direction.

The switching apparatus and the relays are most interesting The long established and well known rule of inverse squares enters so strongly into the design of apparatus of this character and the line of demarcation is so distinct as to leave astonished even the designers themselves.

An examination of the detailed illustration shows that the relay consists of a core upon which the wire is wound, a frame, an armature and a spring block which serves the double purpose of carrying the contact springs and retaining the armature in place, at the same time allowing freedom of movement.

It will be observed also that the armature extension which causes the movement of the springs points in the same direction as the springs themselves. This construction permits the spring movement to be accomplished with but a very little over one one-hundredth of an inch air gap, and results in an exceptionally powerful and at the same time sensitive relay.

The illustration of the one hundred point switch will bear careful scrutiny. It will be seen that the same principle regarding air gaps has been applied to this piece of apparatus that were used in designing the relay.

The three switch units, each consisting of a magnet and its working parts, voz., rotary, vertical and release ,are identical in construction and interchangeable.

The armatures are mounted upon hardened knife edge bearings, extending across the entire width of the armature, and held in place by spiral music wire return springs which perform a double duty. Both pawls and pawl guides are of hardened steel and practically indestructible.

All adjustments are effected by means of steel blades recessed into the die moulded frames. This method of adjustment is positive, and cannot be shaken loose in service. Hence a switch once adjusted is adjusted for all time.

The bank contacts are placed vertically instead of horizontally, to prevent dust accumulation, and thus the rotary motion precedes the vertical.

The spindle is of crucible steel, ground to accurate size, and both the rotary ratchet and vertical rack are easily removed from the shaft and readily replaced by new parts in the event of wear.

The entire switch is so well and carefully fitted that it is difficult to see where wear can occur.

The one motion, twenty point switch is so similar in construction to the larger switch as to hardly merit a separate description.

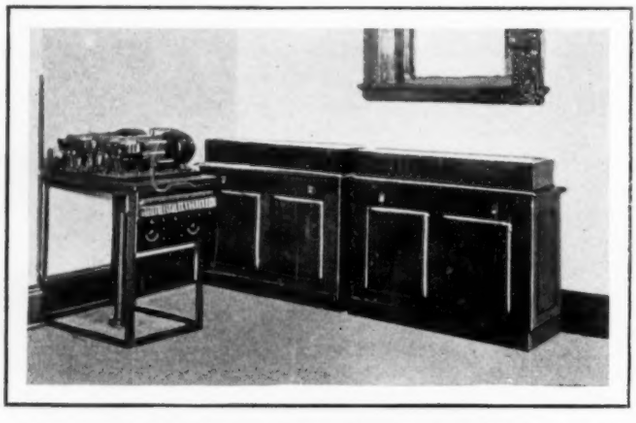
All circuits are clean cut and balanced, and contain no greater number of talking contacts than a standard common battery cord circuit.

They are absolutely free from margins and hence free from sluggish or fast and slow relays.

There is not a relay in the system having more than one winding, or more than one armature, not a set of spring contacts in which it is necessary to establish one contact before breaking another.

Controlling impulses are not required to pass over the varying length of subscribers' lines, but are local to the exchange itself, hence all switch adjustments are alike and all switches once adjusted remain adjusted, as the conditions under which they are called upon to operate are constant and not fluctuating.

Variations in battery voltage are said by the manufacturers to have absolutely no effect upon the system, as the apparatus will work with equal facility whether taking current from cells freshly charged or exhausted to as low



A Corner of the Equipment Room, Showing Impulse Sending Machines and Synchromonic Convertor Cabinets.

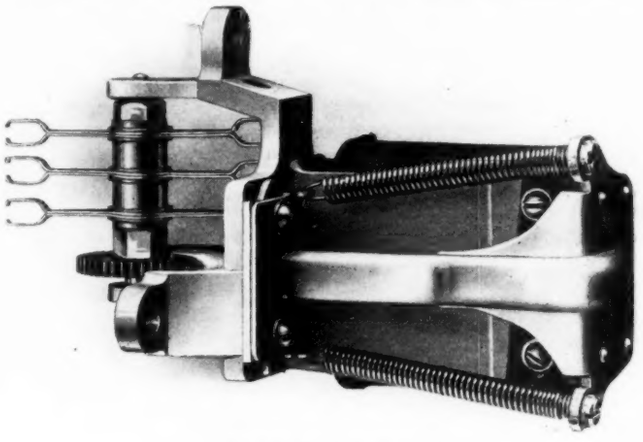
a point as storage batteries can be carried without injury to themselves.

No grounds are used except upon rural lines of more than five parties.

The action of each piece of mechanism is positive and its function direct. These features make for low maintenance and freedom from service interruptions.

CURRENT CONSUMPTION.

The accompanying charts from the recording ammeter, which has been in service constantly, are selected partly



Distributing Switch.

because they are typical, and partly because they represent a recent week. Calibration of this ammeter shows that it registers about 25 per cent high.

SPEED AND REGULARITY OF SERVICE.

The Ashtabula Harbor board has now been in operation six months, under conditions as severe as any to be met in telephone practice. Daily tests have been made and careful records kept. These records fully justify the North Electric Company in announcing that all previous estimates have not only been confirmed, but exceeded in the showing actually made, as will appear from the following tables:

	1st	2nd	3rd
Shortest Period	1.60 seconds	2.00 seconds	1.60 seconds
Average five " "	1.92 "	2.04 "	1.65 "
Average ten " "	1.96 "	2.18 "	1.80 "
Longest Period	12.40 "	7.60 "	5.40 "
Average five " "	7.44 "	5.52 "	5.32 "
Average ten " "	6.34 "	5.34 "	4.44 "
Average entire 100 calls...	3.36 "	3.37 "	3.16 "
Hourly rate of calls.....	1060	1067	1139

October Record.

	1st	2nd	3rd	4th	5th	6th
Shortest Period....	2.00	2.00	1.40	1.80	2.20	2.00
Average five " "	2.00	2.12	1.80	1.92	2.36	2.12
Average ten " "	2.16	2.26	1.92	1.96	2.44	2.26
Longest Period....	7.00	8.20	7.40	5.60	7.40	10.00
Average five " "	5.64	7.00	6.36	5.16	6.56	7.68
Average ten " "	5.06	6.26	5.56	4.86	5.88	6.42
Average entire 100 calls.....	3.20	3.60	3.17	2.94	3.60	3.52
Hourly rate at which calls are being handled.....	1125	1000	1135	1224	1000	1022

Test Records of 100 consecutive calls taken by stop watch—September, 1909.

Regarding these figures the North Electric Co. states:

"These records represent the time actually spent by the operators in handling the calls tested, and were secured by checking the time between the action of the listening and starting relays with a stop watch.

"They are inaccurate for the reason that it is impossible for any human being to operate a stop watch fast enough to catch the shortest calls, and it is only occasionally that a fairly rapid call is caught hence the averages above shown are not a fair index of what the operators are actually doing. We hope to be able in the not distant future to show records taken by a chronograph which will show in ink upon a permanent record the actual time consumed down to the one-hundredth part of a second, and are positive that under these conditions the averages will be much better."

Daily Records of Calls for the Months of

(427 Telephones) August				(462 Telephones) October			
Aug.	1,	1909 Sunday.....	2,142	Oct.	1,	1909 Friday.....	4,912
"	2,	" Monday	6,414	"	2,	" Saturday ...	5,096
"	3,	" Tuesday	5,856	"	3,	" Sunday	2,172
"	4,	" Wednesday .	6,152	"	4,	" Monday	4,944
"	5,	" Thursday ...	4,904	"	5,	" Tuesday	5,004
"	6,	" Friday	5,532	"	6,	" Wednesday .	4,776
"	7,	" Saturday ...	5,740	"	7,	" Thursday ...	4,128
"	8,	" Sunday	2,632	"	8,	" Friday	4,780
"	9,	" Monday	5,320	"	9,	" Saturday ...	5,364
"	10,	" Tuesday	5,336	"	10,	" Sunday	2,564
"	11,	" Wednesday .	10,988	"	11,	" Monday	5,172
"	12,	" Thursday ...	5,532	"	12,	" Tuesday	5,536
"	13,	" Friday	6,816	"	13,	" Wednesday .	5,448
"	14,	" Saturday ...	4,588	"	14,	" Thursday ...	5,260
"	15,	" Sunday	2,588	"	15,	" Friday	5,476
"	16,	" Monday	5,253	"	16,	" Saturday ...	3,200
"	17,	" Tuesday	5,273	"	17,	" Sunday	2,748
"	18,	" Wednesday .	5,328	"	18,	" Monday	4,980
"	19,	" Thursday ...	6,714	"	19,	" Tuesday	5,352
"	20,	" Friday	6,314	"	20,	" Wednesday .	5,236
"	21,	" Saturday ...	7,084	"	21,	" Thursday ...	5,228
"	22,	" Sunday	1,380	"	22,	" Friday	5,324
"	23,	" Monday	5,720	"	23,	" Saturday ...	6,124
"	24,	" Tuesday	5,284	"	24,	" Sunday	3,072
"	25,	" Wednesday .	7,176	"	25,	" Monday	5,660
"	26,	" Thursday ...	5,140	"	26,	" Tuesday	5,612
"	27,	" Friday	4,928	"	27,	" Wednesday .	4,988
"	28,	" Saturday ...	7,144	"	28,	" Thursday ...	4,992
"	29,	" Sunday	1,942	"	29,	" Friday	5,652
"	30,	" Monday	3,970	"	30,	" Saturday ...	2,488
"	31,	" Tuesday	5,940	"	31,	" Sunday	2,007
Total for month including Sundays			165,130	Total for month including Sundays			143,295
Total for month excluding Sundays			154,446	Total for month excluding Sundays			130,732
Daily average including Sundays			5,326.77	Daily average including Sundays			4,622.42
Daily average excluding Sundays			5,946.23	Daily average excluding Sundays			5,028.15
Average per 'phone per day for entire month including Sundays			12.47	Average per 'phone per day for entire month including Sundays			10.00
Average per 'phone per day for entire month excluding Sundays			13.91	Average per 'phone per day for entire month excluding Sundays			10.88
Average per 'phone per day, Sundays only			5.00	Average per 'phone per day, Sundays only			5.43
Average per 'phone per day, August 11, 1909			25.73	Average per 'phone per day, October 23d, 1909			13.25

The following records of subscriber's waiting time represent the standard of service being received by the subscribers. Averages are based on tests of 100 calls:

	September	October
Shortest wait	1.00	1.00
Average five " "	1.28	1.28
Average ten " "	1.34	1.34
Longest wait	5.20	7.40
Average five " "	4.64	5.32
Average ten " "	3.80	4.38
Average entire 100 "	2.07	2.20

As in the case of the records showing operating time, the operators did not know that tests were being made, and the usual difficulties attending the operation of a stop watch were experienced.

In connection with these service records, it is interesting to know that an account of calls has been kept ever since the first lines were cut over. An automatic register, consisting of a Veeder counter operated by a relay is permanently connected with each key set, to take this record. The total number of calls which have been handled with the Automanual system, beginning in June, has been 796,690, up to the first of November. The records show a steady growth in telephones since the Automanual system was cut into service, although since the summer months there has been a progressive decline in the number of calls handled, as so much of the business is dependent upon the shipping, which is at its height in the summer season. Business will probably remain approximately stationary from December until April, when it will again build up, but the growth in telephones is a sure indication that the service appeals to the people.

TELEPHONY'S representative visited numerous business people, including offices dealing with the shipping, a bank and stores, and talked with persons using the telephone, in charge of or employed in the places he visited. The only comment approaching an objection was that in case of an accidental disconnect, which is possible from an accidental depression of the switch-hook, if both parties attempt to re-establish the connection both lines test busy. This is a feature of all ordinary telephone service which can be remedied by education. For example, subscribers could be taught that the called party should hang up and wait for the calling party to re-establish the connection.

In these visits it was found that the subscribers hold the highest opinion of the rapidity of the service, and although wrong numbers are given occasionally, they speak well of its accuracy. Their content with the service is especially significant in view of the fact that in March, 1909, the exchange was temporarily put out of business by the sleet storm, and not only was their patience taxed by delay in making repairs, but the replacing of open wire lines to the main exchange by cable has caused transmission to be below a desirable efficiency.

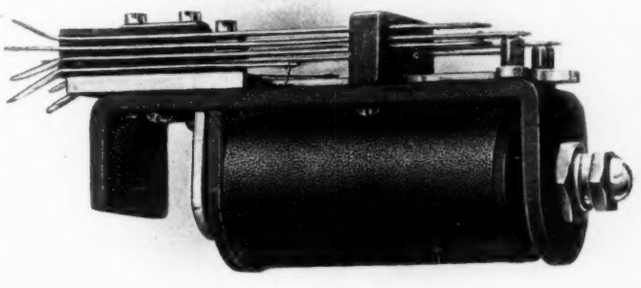
Practically all the subscribers visited were interviewed as to the frequency of trouble, and said that there has been hardly any since general outside repairs were completed. Many of the more intelligent were fairly enthusiastic about the service.

COMMENTS OF CONSULTING ENGINEERS AND TRAFFIC EXPERTS.

The records and opinions of the North Electric Company are nothing short of startling to one who has not seen the apparatus working. But to one who has, they seem very conservative. The opinions of well-known consulting engineers who have seen the apparatus are interesting.

Kempster B. Miller stated, on June 10, 1909:

"As for the apparatus in which the North Electric Company has embodied the Automanual system, I can only speak in the highest terms. * * * To my mind it is designed and built along extremely clean lines and in a way that leaves no doubt whatever as to its capability of operating satisfactorily and with a very low maintenance cost.



Relay of the Type Used in the Antomanual System.

"The system is fundamentally sound in principle, and it is at present embodied in apparatus of a very great excellence of design, workmanship and material."

Edmund Land, who had previously investigated the system to a certain extent, after spending a day making tests, wrote, on October 25, 1909:

"In determining the actual time required by an operator to handle the calls, a stop watch was used and the total time required by an operator to depress the key for the purpose of answering the calling subscriber and set up the connection by depressing the requisite number of keys, which in this case was five; averaged for one hundred timed connections, 2.47 seconds per call. Out of those one hundred calls there were five connections put

through on an average of 1.44 seconds, and ten on an average of 1.56 seconds. The quickest call was completed in one second and the slowest in five seconds.

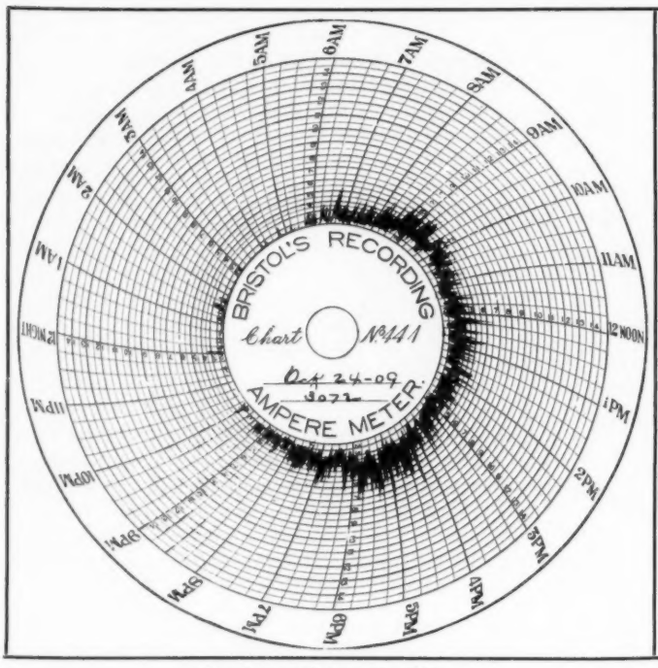
"On the basis of the average, which was 2.47 seconds, each operator could handle in an hour 1,458 calls, provided, of course, that the calls were coming continuously and no interruptions occurred, other than was observed during the one hundred calls consideration.

"During the time that these one hundred calls were being supervised, many calls were passing through the board for the main exchange, but since this class of calls represents a partial connection in an actual working exchange, two buttons being required to be presséd, no attempt was made to time them.

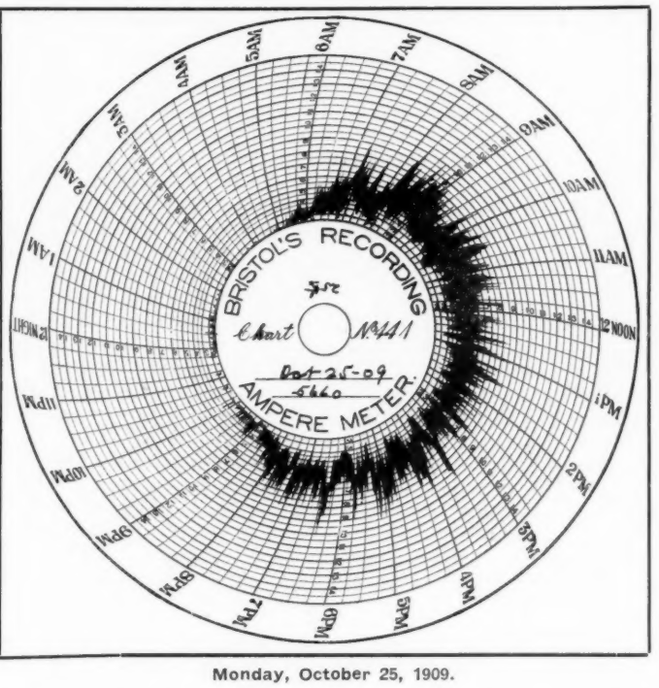
"In addition to timing the operator's actual work in making connections, twenty calls were initiated from a telephone connected with the system and the average time elapsing before a response was received from the operator was 1.9 seconds—the quickest response being one second and the slowest response being 5.4 seconds.

"In this office the average time required by the impulse sending machine to complete a switch and ring the called subscriber's bell, figuring from the time the work was finished by the operator, that is, from the time she presses the start button, was 4.2 seconds.

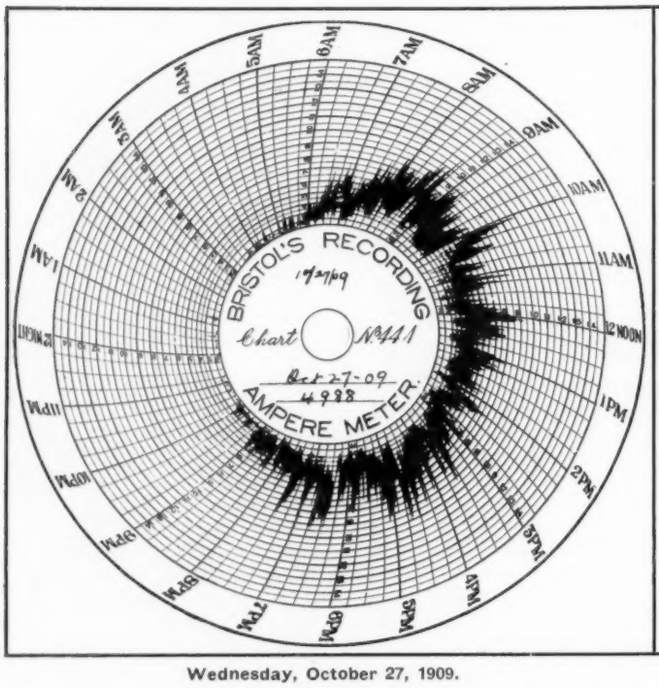
"From the above results it will be seen that the average time which would elapse from the time the receiver was removed by the subscriber, until the called party's bell



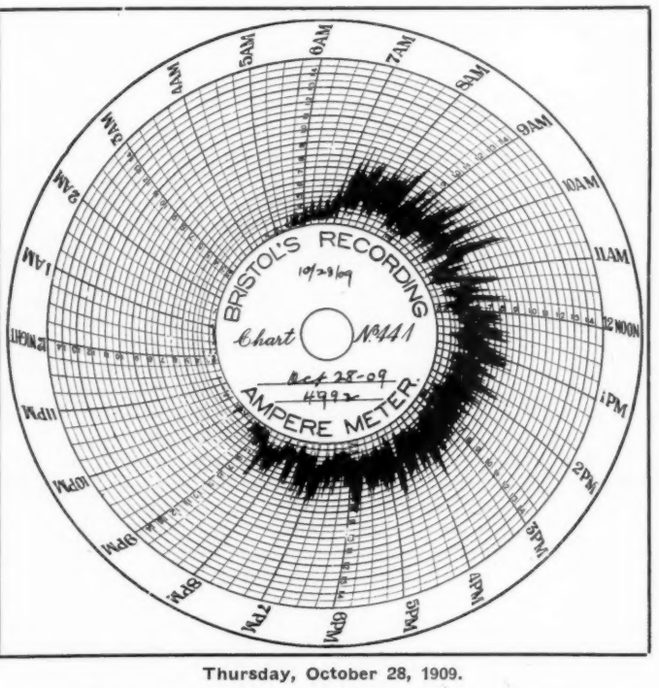
Sunday, October 24, 1909.



Monday, October 25, 1909.



Wednesday, October 27, 1909.



Thursday, October 28, 1909.

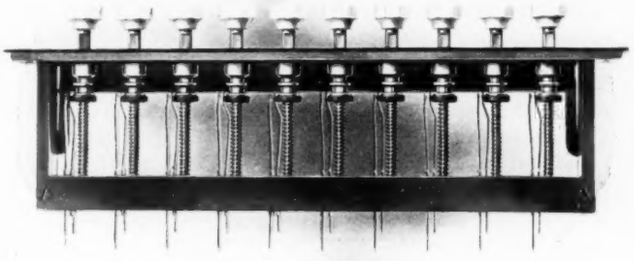
Records from the Recording Ammeter Show Current Consumption of the Automanual System for Six Days in the Last Week in October. Records for Other Weeks Have the Same General Characteristics.

was being automatically rung, would be 8.57 seconds, divided as follows: 1.9 seconds for a response from the operator, 2.47 seconds for the operator to set up the required number, and 4.2 required by the impulse sending machine to complete the switch and start ringing the called subscriber's bell.

"The Ashtabula Harbor system is one of 1,000 line possibilities, employing three digits only in the subscriber's number. In this exchange the operator is required to press five buttons in each connection. In an office with 10,000 possibilities, there would be four digits in the subscriber's number which would add to the time required by the operator to complete the connection, approximately 0.2 seconds.

"It is just fair here to state that the operators at Ashtabula knew that they were being supervised during the time that the calls were being recorded in the office; they did not, however, know that they were being supervised when the service tests were made from the subscriber's telephone as before mentioned.

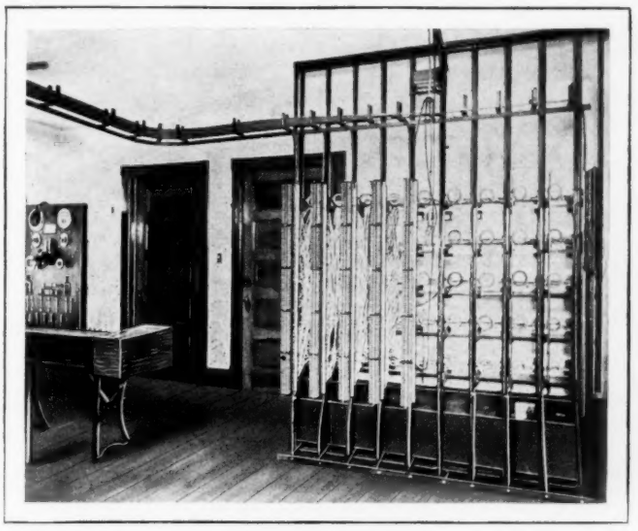
"As a matter of fact, the speed attained by the operators



Strip of Keys from Operator's Keyboard.

and the smoothness with which the calls are passing through the office, is very much greater than on my former visit just after the cut-over, and the speed with which the subscribers are answered and the calls set up by the operators, is really wonderful and surpassed to a considerable extent, the writer's previous estimates of the possibilities."

J. P. Boylan, a well-known traffic expert, who has been in charge of operating and traffic work for the Cuyahoga



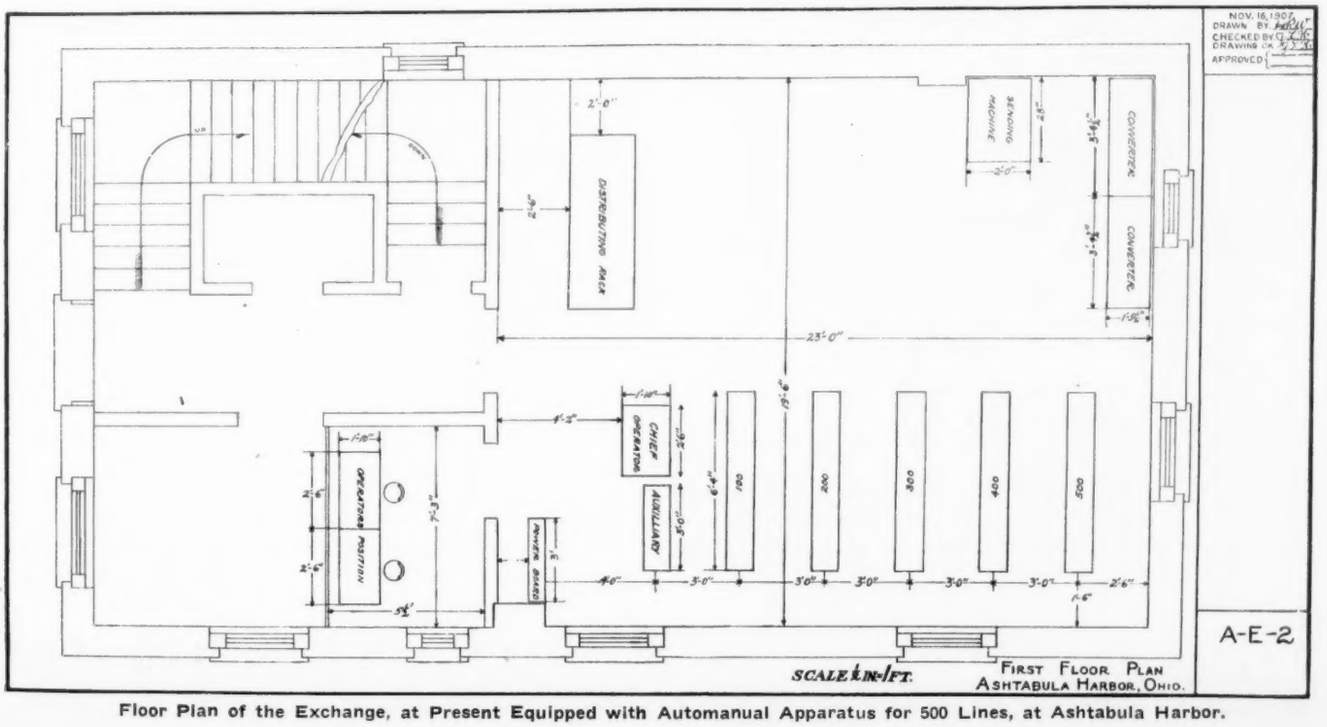
Main Frame, Information and Wire Chief's Desk, and Power Board.

Telephone Company and the Home Telephone Company of Detroit, Mich., among others, in his report of some tests, written on September 22, stated:

"Practically all of the business subscribers were interviewed. In making service tests from each telephone I called residence telephones and inquired regarding the service. In this manner I talked with approximately one hundred subscribers.

"Eighty-seven per cent of all subscribers interviewed reported the service as entirely satisfactory. The balance, while expressing themselves as pleased with the service in general, reported irregularities of a trivial nature, and which were not directly traceable to the apparatus, such as being called by mistake, bell tingling, etc.

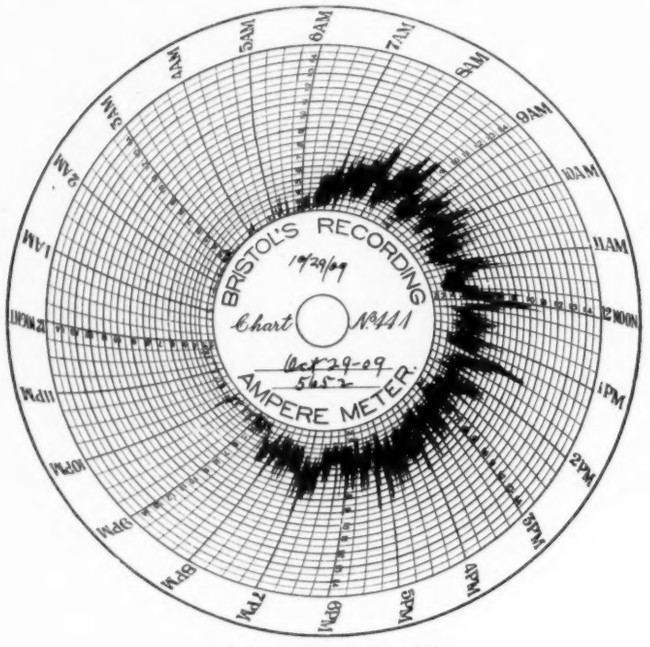
"The heaviest telephone users in the business section



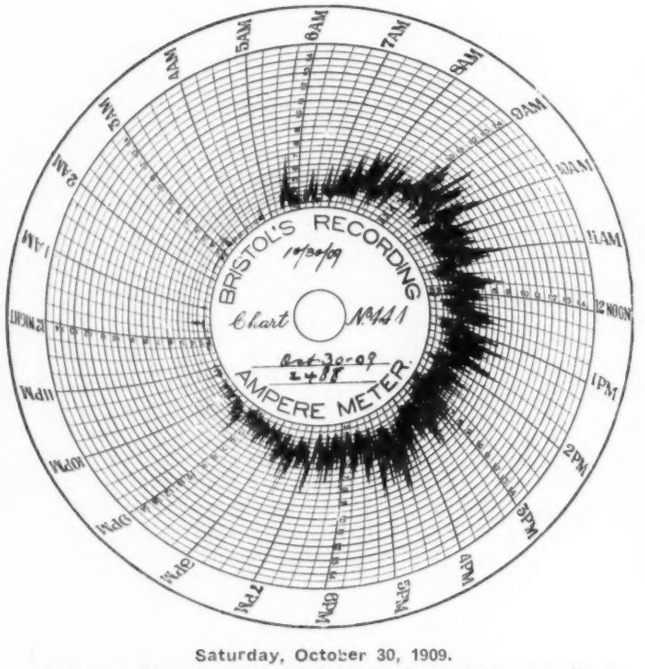
Floor Plan of the Exchange, at Present Equipped with Automanual Apparatus for 500 Lines, at Ashtabula Harbor.

are particularly pleased with the quick disconnecting feature, permitting them to make several calls in succession without the delay they experienced heretofore.

"Everyone speaks highly of the rapid answering service given by the operator. I made one hundred and three service tests in all, scattered throughout the day from 9:50 a. m. to 5 p. m. The average answer was 2.4 seconds. The



Friday, October 29, 1909.



Saturday, October 30, 1909.
Ammeter Records of the Ashtabula Current Consumption.

quickest response was at 4:40 p. m. and was one second, and the longest wait at 11.35 was eight seconds. The next longest wait to the one just mentioned happened at 11:30 a. m. and was four seconds.

"Favorable comment is also made regarding the secrecy feature. The manager of a hotel, whose telephone number is 301, has as guests foremen of the ore and coal concerns in Ashtabula Harbor and has heard these men remark that they now converse between the hotel and office on matters which they would never dream of doing under the old system where the telephone operator could switch in and listen to the conversation."

The Right Kind of Insurance for Telephone Property.

Offices of the Telephone Fire Insurance Exchange have been opened at 1009 Y. M. C. A. Building, La Salle St., Chicago, Ill., for the purpose of writing insurance policies on telephone buildings, switchboards, supplies, and use and occupancy, or rental income.

Mr. James B. Hoge, formerly president of the International Independent Telephone Association, who is well and favorably known among telephone men, is in charge of this work, and is giving it his personal attention as attorney, representing the underwriters.

The plan of this exchange is to insure members only, or in other words, do a mail order telephone insurance business. The rates charged will be the same as the established companies. After paying losses and operating expenses the surplus, each year, is to be divided into thirds, 1/3 being paid back pro rata to policy holders and 2/3 credited to their accounts, until it equals 15 cents for each telephone operated by them, after which it is paid back in full.

Mr. Hoge stated that it is not the intention of the Exchange to carry all of any one's insurance, but what it will furnish is a policy of $500 to $1,000 on each telephone exchange in the United States.

At the recent Illinois Independent Telephone Association convention in Decatur, at which Mr. Hoge spoke on this subject, many of the delegates seemed greatly interested in the "Use and Occupancy" insurance, it being quite new to them.

Provocative of Vinegary Conversation.

Different uses of the telephone are heard from day to day says "The Telephone News," but a new use of a part of the telephone was discovered recently.

A storekeeper was waiting on a customer who had ordered vinegar. Being unable to find the funnel he used the mouthpiece of his telephone instead.

Underground System in Kansas Town of 1800 Inhabitants.

Owing to the rapid growth of the business of the Russell Telephone Company, Russell, Kansas, Manager W. T. Frier is at present busily engaged in placing all the wires in the business district of the city in underground conduit. It was found by the company, that some changes would have to be made as the wires were becoming so numerous that the poles were not large enough to carry the additional weight, and the company adopted the underground system as being the most practical. Two thousand dollars is being expended at present in installing this system, and about 2,000 feet has already been laid. This change places the system of Russell among the best telephone exchanges in the state, and presents an interesting situation owing to the fact that Russell is but a small city of 1,800 inhabitants. Service is given to over 300 subscribers at present, and the business is rapidly increasing.

Shooting Dusty Jack Trouble With an Air Gun.

Dust in the switchboard jacks has been a prolific source of trouble at the Cheyenne exchange and, by preventing the subscriber's signal from coming in, has caused many complaints of "Can't get Central," says the Rocky Mountain Bell Telephone News.

This trouble has been overcome in a most ingenious way. Connection was made with the compressed air tank of an automobile garage across the street and the compressed air has been piped into the operating room. The pipe terminates in a stout rubber hose fitted with a nozzle made

from a switchboard plug and controlled by a valve. With this contrivance the jacks are blown at frequent intervals, the high pressure making them perfectly clear.

Since the installation of this "air gun" method of "shooting trouble" complaints of "Can't get Central" have been reduced almost to nothing.

Telephone on Wyoming Ranches.

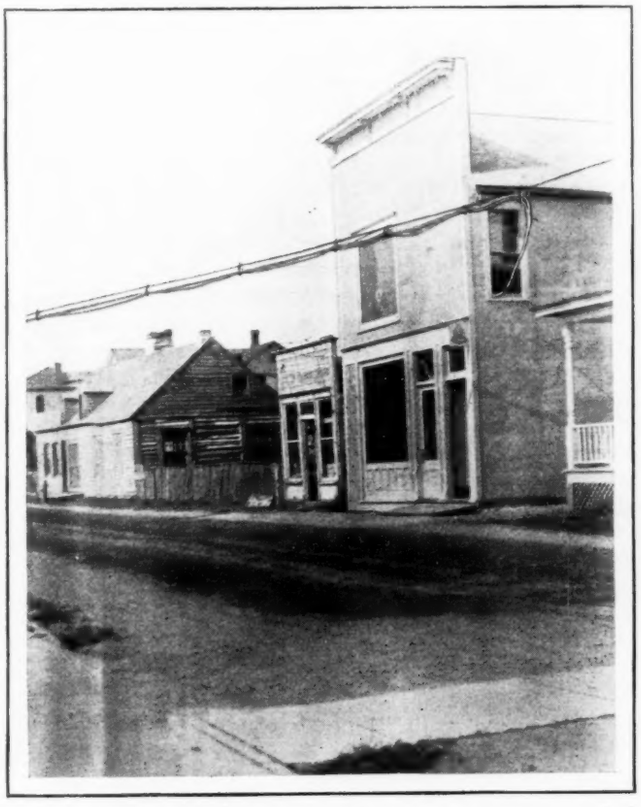
Senator C. D. Clarke of Wyoming recently made a trip over the state, covering 1,400 miles in a wagon.

While he was away from the railroads all the time, and a great deal of the time from a telegraph line, says the Salt Lake Tribune, there was never an evening when he did not call his home in Evanston by telephone.

"This shows," said the senator, "that this western country is growing at an astonishing rate. It used to be that the railroad was the forerunner of civilization, but now it is the telephone. Everywhere in my state there are telephone lines."

Bell Standard Construction in Michigan.

This interesting view of the oldest house on Mackinac Island, at the head of Lake Michigan, also shows in the foreground the building occupied by the Michigan State Telephone Company, with its Bell telephone exchange, in this beautiful and flourishing summer resort. A couple of cables are strung across the street on a low messenger, in



Oldest House, and Telephone Exchange on Mackinac Island.

fact so near the ground that if a load of barrels should attempt to pass there would be the proverbial rain. But it would be of cable hangers instead of water, for the cables are draped across fantastically in long and short lengths, four different types of hangers being used, beside a few pieces of twine in ties of nondescript pattern.

The method of gaining entrance to the building is also interesting.

Other business houses on Mackinac Island have co-operated in making it a sort of "Spotless Town," but as the Bell telephone company has no competition there it puts in construction of the type shown in the photograph, with some of the worst defects glossed over by the camera.

With experienced telephone men such construction is significant from another point of view, viz., the liability of excessive cost for maintenance, and also risk of poor service.

Clearing Subscribers' Accounts Through the Bank.

A Practical Method of Solving the Problem of Keeping Outstanding Accounts Low, and Reducing Collection Costs, as Worked Out in a City of the Southwest.

BY C. H. MCKINNEY.

On taking charge of an exchange a new manager found that, of all the things which were in a more or less chaotic condition, about the worst of all was the collection rating.

Some subscribers paid promptly at "Central"; others paid promptly when called upon; some paid whenever they felt like it or happened to meet the manager on the street; and not a few good citizens gave up the cash very grudgingly after having been asked a number of times. A large percentage of subscribers were always three to six months behind in their payments.

Now most of this trouble has been avoided by utilizing the local bank as a collector. All subscribers who have bank accounts are requested to let the company collect their bills at the bank the first of the month. Special bills go to subscribers who do not have open accounts, or are not willing to allow collections to be made in this manner. A statement is mailed to each of these persons on the first day of every month. Across the face of the bill is printed the notice:

"Payable at the ——— Bank on or before the 15th."

The bank is furnished a list of the bills mailed, showing the amount due opposite each subscriber's name and number. As each account is paid it is checked off, and the date set

Flagstaff, Arizona, ... 19.....

Mr. .....

Your bill for telephone service, ... $.....

due the first day of this month is still unpaid. If not paid by 4 P. M. of the last day of this month we shall be compelled by the rules of this company to disconnect your 'phone.

Payable at the office of M. I. Powers, treasurer,—check or cash.

FLAGSTAFF MUTUAL TELEPHONE COMPANY.

Reminder Sent to Delinquents on Twentieth of Month.

down. This is all the work the bank has to do and the telephone company pays no attention to following up the delinquents until the twentieth of the month. On this date the list is examined and anyone found to owe the company receives a reminder, which is at the same time a notice that disconnection will follow on the last day of the month.

Lines of all subscribers whose accounts are unpaid on the final day are disconnected without further notice. This plan gives the subscriber a full month in which to pay, so none can make a reasonable excuse for not getting the money in. It has been necessary to make but few temporary disconnections, and only one removal. The total cost of collection is that of making out and mailing bills and reminders, and but few of the latter are used.

The banks make no charge for their part in the work, as they have free use of the money collected until the end of the month, when checks for wages, etc., are drawn.

The Illinois Convention

Business-like talk was in order at the convention of the Illinois Independent Telephone Association held at Decatur last week.

Things were put in motion by Dr. A. R. Taylor, president of James Millikin University of Decatur, who in an address on "The Telephone as a Civilizer," said:

"We receive the benefit naturally from competition, benefit in better service and benefit in lower prices. I am satisfied we are getting far better service from the general telephone company than it would have been possible for us to secure without the Independent coming into the field and making things lively."

Then came Frank H. Woods of Lincoln, Nebraska. He said, speaking on the topic—

WHAT INDEPENDENT TELEPHONE COMPANIES MOST NEED.

We know the benefits of competition. It is here to stay. I think it well for the Independent telephone men to always bear in mind the history of the telephone movement. We have four stages in development.

The first is the stage of monopoly—the stage when the American Bell Telephone Company had an absolute monopoly of the business under patent rights. I want to call your attention to this feature. Ordinarily when the government grants a man a patent, it does it to protect him in the sale of his apparatus and enable him to make a profit. The Bell wanted a monopoly not only in the apparatus, but wanted a monopoly in its use. They insisted not only on having a monopoly of the apparatus, but wanted to keep in their power the telephone business of the country. After the patent rights expired they perpetuated that monopoly for a number of years. There were only a few Independent telephones then in use, but the movement developed so fast they not only put in twice as many, but the Independent telephone companies found themselves absolutely deluged by a demand for telephones. They were pretty nearly carried off their feet. It simply resulted in extending their plants, using all kinds of systems and apparatus, so they merely had a patchwork system. Then the Independents had trouble with promoters that came into the field some of whom were dishonest. We had to meet the attacks of the Bell Company in every way. Yet the demand for telephone service was such that the people who wanted the service came forward and put in money and some kind of a system was put in, and the people were given some kind of service. It did all right on the start because it was the first telephone service they had, better than nothing, and they didn't kick. We have passed through that period; have had a number of failures, as all similar industries have had who have passed through the same stage; and today we have reached a point where a great opportunity is opened up to the Independent telephone field.

Now the question is, are the Independents able and willing to grasp it and take advantage of it? The time is at hand for more definite action.

What we most need today first is organization. Now, I think the first organization that ought to be effected in each state, is a county system, or a district system. The time is past when one little Independent telephone plant can be operated by itself and give the kind of service the people demand. Today they not only want local service, but good service and long-distance service. The first section they want to cover is their own county and immediate neighborhood. I think it would be a good thing if telephone companies in each county were all gathered together with one capital. If you all get together in one county and have a good county system and give first-class service, that system will be large enough so you can keep a first-class telephone man to run it; a man who knows something about engineering to lay out and properly develop the plant and to build it, and give good service. If your companies are not on a sound financial basis, the quicker you put them on that basis the better.

When you put your plants in good condition and give good service, you want to see that men who put money in your plant receive dividends and receive them regularly. It is no trouble for any company to earn dividends.

Put telephone plants on a business basis; give the people the very best of service; they won't put up with anything else. In this day of competition you've got to keep up with the procession—not only keep up and get ahead but keep ahead. The trouble with us in Nebraska for a long time was that we were all the time stewing and worrying about what the other fellow was going to do; instead of developing our own plants we were running around the state to keep our neighbors in line.

(Here Mr. Woods devoted some time to the discussion of a plan of organization.)

In Nebraska we have had a clearing house the last two years, handling a large volume of business and doing it very successfully. We got out a directory, and the directory hadn't been out ten days before we found a great increase in our toll business.

I think the outlook for Independent telephones was never as bright as it is today. I have been closely associated with the work several years, have been connected with committees and state association, attended different meetings and conventions, keep in touch with it, and I see that the time never was when we were in as good shape as we are today. Of course there are a few clouds on the horizon, always will be, but what are those to a strong body of men with millions invested?

Get together and form a system of association, and when you have once gotten that system formed, our opponents will recognize that you have established yourselves in a stronghold and that you are here to stay, and they will stop fighting. The day of destructive competition in the telephone business is near an end; we are going to have an era of constructive competition. If you have to fight, get together and preserve what you have, and we will have the most successful business on earth. The telephone today is a necessity. The people want this service good, will continue to want it. You have the facilities to furnish it and you have the ability to operate it. Get a system founded on home ownership, operated by home people, and you are bound to win out against any competitor. Let's stand together and win the victory and let's clinch the victory we have already won.

* * *

President Savage said at the conclusion of this address: "Mr. Woods has struck the keynote to the whole situation."

J. W. Collins of Decatur moved that the association vote that Illinois should form an organization along the lines suggested by Mr. Woods. The motion carried.

The members of the association extended to Mr. Woods a vote of thanks for presenting this matter to them.

A motion by Mr. Cheadle that the president appoint a committee of three to discuss this matter and make a report was carried.

The next paper was by W. G. Olwin of Peoria, Ill., on

PRIVATE BRANCH EXCHANGES AND INTERCOMMUNICATING SETS.

We have in Peoria forty separate places using either a private branch exchange or an intercommunicating set. Of these we own and rent the instruments to the subscribers in all but two, one hotel with 150, and the other a bank with 14 telephones. This leaves a total of 38 places with 386 tele-

phones. To these 38 places we have connected 52 trunk lines only, and receive for all a total of $399.43 per month, or an average of $10.25 per subscriber about $1 per telephone per month.

There is another profitable side and really a very important one to this same question in reference to your business. It ties many of the very best and most influential firms in your city to a long time contract (we make it three years) to use your particular system. The following, a partial list of the firms on our books that use our private branch exchange or intercommunicating systems, shows what strength such a list of long time contracts gives to a company: Four wholesale groceries, Peoria Water Works Company, Colburn & Birks Wholesale Drugs, three largest distilleries in the city, three national banks, two of the largest retail stores, two hotels, eleven manufactories, Peoria High School, Peoria Daily Journal, Peoria Herald-Transcript, Peoria postoffice, P. & P. U. railroad, Chicago & Northwestern railroad, and thirteen other miscellaneous concerns.

Now as an added safeguard to the length of the contract, these same contracts do not mature at the same time, so there could never be any concerted action toward a general dropping of your telephones that would include these firms, without a long delay and a consequent dampening in the ardor of the opposition.

Concerning the expense of installing these various systems, it is almost impossible to give an accurate price for them as they are put in under widely different conditions. For instance, it costs a great deal less to install a set in a bank or a law office, than it does in a distillery, a factory of any kind, or a railroad, and right here is where you, Mr. Manager or Mr. Solicitor, must be strictly on to your job.

If the telephones are widely scattered such as an agricultural implement factory or an asylum, always advise a private branch exchange, as you will save a large initial cost for expensive cable and installing; but if it is in a bank, law or doctor's office, advise an intercommunicating set, as you will save the expense of a switchboard.

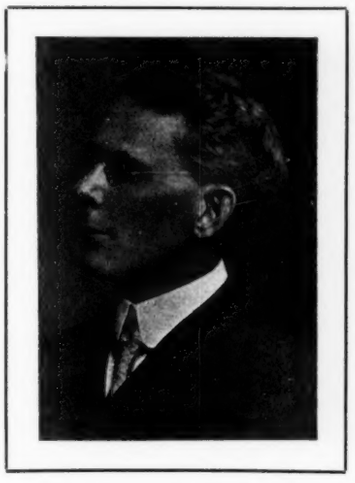
Again, if the number of telephones to be installed is over twenty, advise a switchboard, as the service will be better, but if it is under twenty, advise an intercommunicating set, as the firm will not be compelled to hire an operator. With a small number of telephones an intercommunicating set gives just as good service for a great deal less money expended by the telephone company.

As near as it has been possible to figure, our installations have cost between $22 and $27 per station. Now an initial cost of $25 per station and a rental of $12 per year with a maintenance cost of $1.50 per telephone per year, leaves an average margin of $10.50 per annum net income from each telephone installed.

Right here I know the question comes up in your mind as to the expense of maintenance which must be considered in its relation to the profits derived from this branch of the business. I can only state from our experience as follows:

We have one private branch exchange man. This man keeps all the 40 places in apple pie order, finds time to install all new systems and make all changes. He is paid $2.25 per day and often assists at other work, when he is not needed at his special duties. This makes $60 per month for labor to maintain in proper shape 40 systems large and small, or an average of $1.50 per month per system.

In every city there are hundreds who start out telling everybody they meet that the new company can never drive out the Bell; that the Bell has too much money, too many subscribers, and that people never will pay for two telephones. You and I have met these men every day on the streets and in the offices of our home town. We all know that their statements are false and that they have been proven untrue in thousands of cases. Now what effect does it have on these knockers to tell them that the biggest wholesale grocery in the city has 26 of our telephones? That a certain railroad threw out a switchboard of 35 telephones and took ours instead. That the state asylum had 42 installed only recently, and so on. As fast as you get a new one tell your customers and acquaintances and the knockers of the good news. They will repeat it and it will be like an endless chain—one person telling another, and because it is so unexpected to them, the effect will, as I stated above, be to change these men to enthusiastic helpers.



Mr. C. B. Cheadle.

Again, don't forget to use the advertising matter which is from time to time issued by the various manufacturing concerns. There are many most valuable ideas to be gleaned from them that can be used when urging your customer to install a more complete system. Remember this, that the men who make it a business of producing supplies for us, are full of telephone knowledge, and whenever they get out any advertisements these same productions reflect the genius of the man that built up the business, and it is this genius of every other man that we all should want to use to our own advancement. Making it a part of ourselves and thereby attaining perfection in our chosen calling, that of installing telephones and keeping them installed.

But, how is a good way to go after and secure the contracts for installing this extra service business? First, get your information. Then solicit. That means a whole volume —personal solicitation. Pick out your firm, find out the proper man in the firm so to see and call on him yourself, all posted on the advantages of an extension system in his business. The subject is fascinating if you go deep enough into it. You can't help impressing everyone you talk to, that it is a first assistant general manager in any firm that installs it. In fact, it will take the place of an extra man in any large establishment, for it is a time saver "par excellence" from the fact that it saves hours each day to the highest priced men in the establishment. It is the president who uses it, or the general manager, or the bank cashier, all of whom must know some little thing at once, and if they have no interior telephone they waste valuable time going to look it up.

Then be patient. Do not expect too much at the first call. These systems are expensive and your men must have time to digest the proposition. Have lots of patience. Go again after a reasonable time has elapsed. Tell them some new idea that had occurred to you and they will ask you new questions that have occurred to them. And never get angry or provoked under any consideration, however exasperating, or your game is lost. Remember, these contracts are in every

town waiting for you, if you seek them intelligently, but you must go after what you want and never give up.

And lastly, it is a first-class talking point. Anybody who has ever sold goods of any description knows the value of a "talking point." The agricultural implement man spends thousands of dollars for some small patent or device to create an extra hard yarn so his goods will have something unusual to refer to, and from personal experience I have found there is no fact in our business that so impresses the citizens of your town as much as the knowledge that your largest firms have subscribed for a whole bunch of Independent telephones.

Try it and see what a help it will be to you in your solicitation for added business.

The next speaker on the program was Mr. C. B. Cheadle of Joliet, Ill., who read a paper on the subject,

ORGANIZATION.

"The arrangement of parts by which a society of individuals is prepared for systematic co-operation." That is Webster's definition of organization. And I like it. Just notice it is the arrangements of parts by which a society of individuals is "prepared" for systematic co-operation. I like that word, "co-operation." It has a "pull together" ring in it.

Have you noticed that there is always system in God's plans? Things don't just happen with him. Neither do they with men. Great worlds have whirled through space for millions of years. They have always been on time. Never been a second late. Never got our of their course and smashed things. Study your own body. See the "arrangement of parts by which a society of indivdiuals (parts) are prepared for systematic co-operation." And they "co-operate," too. See the little wriggling animalcule through the microscope. It's organized too. And it's working. See the rose, the lily, the butterfly. All built upon a plan. A purpose back of everything. All harmony, symmetry, beauty. All parts uniting in the forming of a complete whole. A wonderful Organizer has been at work. A great Architect. A Master Builder. "Consider the lilies how they grow, they toil not, neither do they spin, yet I say unto you that even Solomon in all his glory was not arrayed like one of these."

It is not my purpose to preach you a sermon. I couldn't do it, anyway. But just remember system, order, harmony, is all about you. Only man himself is out of gear. The only discords are of our own making. Mistakes and misfits are our progeny. Clashings, collisions, wrecks, destruction mark our trail from the cradle to the grave. In our mad rush for power, for wealth, for fame, we forget God's orderly plan. We forget God himself, until He pays us the wages of our own rashness. May we not well stop and consider. Let us learn a lesson from the great Builder. Let us get something of his method instilled into us. Give me the energy ruthlessly wasted in this country each year and I will build and equip a railroad from the Atlantic to the Pacific, supply every home with a telephone and a well-filled library and give every man, woman and child a six months' vacation.

Not effort alone is necessary to success, but effort made effective in results. To be effective it must be well directed. To be well directed it must have behind it organization. Turned around the other way, it means this. Organization has for its objects the conservation, concentration and direction of our energies. I shall consider it from three separate standpoints.

First. The formation of the company.

Second. The management of its affairs.

Third. The relation of companies to each other.

And, first, as to "the formation of the company." Let us remember just what organization is: "The arrangement of parts by which a society of individuals is prepared for systematic co-operation." You will note it is the "arrangement of parts." These parts are men. And men are *first*, things. Carpenters call certain kinds of timbers "shakes." They are those cut from trees that were dead before they were cut down. They are practically worthless. There are lots of "shakes" in the telephone business. Lots of companies have more "shakes" than anything else. People who were dead long before they were used in building a telephone company. There is this difference. The tree was once alive. Your other "shake" was usually dead from the beginning. So we need first, *men* to form the "parts" of our organization. Men of character, energy, integrity. Men who know, who are honest, who are truthful. If you don't have these you can't build a good organization for some of your "parts" will be weak. Remember you need lots of red blood rather than red whisky. Brains rather than booze. This isn't sentiment. It's sense. There isn't any place for a boozer or a gambler in your organization. Business today requires a clear eye, a steady hand, an active brain. Get big, strong, *honest* men. Then you have made a good start.

Anyone who can saw off a plank and drive a nail can build a house—of some sort; but it takes a skilled and trained mechanic to build a modern well-equipped dwelling. Some people think that any kind of a company will do in the telephone business. In fact, the greatest care should be used. Every corporation should be so organized as to assure it a certain, stable and consistent course of management. This alone can assure continuous "systematic co-operation" among its members. The possibility of constantly shifting stockholding interests renders its course of management at least uncertain. The issuance of bonus stock I think can be successfully defended. But unless carefully guarded it may be the means of enabling designing persons to obtain control of the company and use it to their own ends. To prevent this is especially important at this time in view of the reported activity of the Bell company in acquiring control of Independent plants. To secure such certain, stable and consistent course of management I heartily commend the voting trust. It should be made for a term of years and should be self-renewing except upon the affirmative vote of at least a majority in amount of the parties in interest to the contrary. The board of trustees should be sufficiently large as to be fairly representative, and not less than a two-thirds vote of all the board should be required for the taking of any action. By-laws and rules governing the board should be adopted and its meetings be regularly called and held and a permanent record made of its proceedings. This should be true also of the meetings of the stockholders and board of directors. Too often a loose method of calling and holding meetings and keeping the records thereof is permitted, resulting in illegal action, confusion, discord and embarrassment to the company. I am the secretary of three important telephone companies at this time, and it is a matter of excusable pride to me to reflect that there never has been a meeting of the stockholders, board of directors or board of voting trustees in any of them where there was a division in any vote that was ever taken. The reasons for this record I may sum up briefly, as

Fi st. The character of the men making up the companies and their boards.

Second. The presence of a carefully worked out plan.

Third. The exercise of absolute good faith. I have dwelt upon the first two of these at length. As to the last, I most earnestly urge that you never cover up, color, or distort any fact about your business, but see to it that every stockholder knows the exact truth. You may trust men, but men must *know* or they won't trust you very long. Never permit a feeling of suspicion to take root and grow. Ignorance is the soil in which it thrives.

In the organization of your company do not permit a dollar of obligation to be created unless a dollar in cash or its equivalent is placed to the credit of the company. This will not appeal to the professional promoter, but it will appeal to the careful, conservative business man whose support and in-

fluence you most need. Loading your company with obligations is equivalent to placing a chattel mortgage upon its opportunities.

Second. "The management of its affairs." The primary object of organization in this department is knowledge. The second is, having knowledge, to use it in such manner as to make effort most effective. The supreme fact then is to know your business. Knowledge of a fact is valuable only in its relation to other facts, hence the need of permanent records in order that comparisons may be readily made. You estimate the distance of an object by considering its relation to other objects. Separate it from those relations and you are utterly unable to make an estimate. No company can hope to prosper to the limit of its opportunity that does not keep a full, accurate and permanent record of the material facts concerning its business. The question will at once arise. What facts should be so recorded? The answer is—those facts should be recorded the knowledge of which is of more value than the cost of ascertaining and recording the same. The application of this rule may be a little difficult. It will depend largely upon the value you fix upon knowledge and your ability to convert it into profit for your stockholders. Knowledge of value will tend to enable you to increase your earnings, reduce your expenses, or increase the efficiency of your service. Any knowledge having a tendency to accomplish any one of these objects in a material degree justifies the expense of its acquirement and recording.

Knowledge being thus the end and aim of organization, it is necessary that a company be so organized as to obtain the greatest possible amount of useful knowledge. And here again comes the matter of the character of your employes. You may say that I am attempting to run a school of morality rather than a telephone business, but let me tell you this—If you fail to heed the character of your men and women too, they will very shortly give character to your business, a character that will mean loss to your stockholders and to you.

Duties should be certain, definite and specific, and the responsibility for their performance impossible of escaping. This is fundamental. Excuses should never be tolerated. Attempting to evade responsibility should be a capital offense. The great Nelson said, "England expects every man to do his duty." That should be the watchword of every telephone company. Every employe from the highest to the lowest should be expected to do his duty.

It would be manifestly wrong, however, to charge one with a responsibility without his knowing exactly what his duties are, and he cannot know what these duties are if he is subject to the direction of more than one superior. This leads me to the consideration of the second fundamental law governing well organized operating forces. *Every employe should be subject to the direction and control of one and only one superior head.* The moment this rule is disregarded the way is opened for shifting of and escape from responsibility, with consequent confusion, discord and neglect of duty. No one but a direct superior should call an employe to account, and no employe should be allowed to carry a complaint over the head of his immediate superior except he takes his own head in his hands. Only by making each employe know his exact duty and by exacting from him its complete performance without the possibility of escaping it can you hope to obtain that efficiency of service that will enable you to fully know your business. The wideawake manager with his forces so organized can very readily ascertain just what knowledge will be of value, and can obtain and record such knowledge with accuracy and expedition.

Every manager will have his own notions as to just what and how much knowledge of his business he is capable of converting into dividends for his stockholders. It will be determined largely by his own knowledge of the business and of his duties as a manager. It may not be amiss for me to point out a few only of the specific facts that every telephone manager should be able to furnish.

In the first place he should have complete records made at the time of the construction of the physical plant. This should include plants showing location of all conduits, manholes, cables and poles and records of cable pairs, terminals and distribution. He should have a permanent record of each telephone and it should be identified by a serial number. He should have a complete warehouse record, checking out or in every article that enters or leaves it. Every employe if working independently, and every foreman or superintendent having charge of work, should make a permanent daily report showing nature of work done, location, time and materials used. In the operating department the same requirements where applicable should be observed. The manager should be able to tell at any time upon a moment's notice the number of telephones in service, the number at the different rental rates, the average monthly and annual earnings, the aggregate monthly and annual earnings, the total rental and toll earnings for any given period, the receipts for any given period, the amount, of rebates, overcharges and bad debts for any given period, the amount, class and character of expenditures, the number and class of telephones installed or taken out on any day or other period; the amount of delinquent rentals and toll; the number class and character of cases of trouble for any day or other period and the average load from time to time in calls made through the exchange. These are a few of the things the live manager who has his business well organized will *know.* Others will suggest themselves to him and to you. I have mentioned only a few of the value of which there can be no dispute. If your board of directors is composed of the kind of men I have suggested they will want to know some of these things. If you can't furnish them, Mr. Manager, you will be hunting another job. The live manager who has selected his employes with care and who has taught those employes to observe, compare and record will have no difficulty in producing almost any desired information on short notice. His ability or inability to do this measures the efficiency or inefficiency of his organization.

Another thing let me urge upon you. Cultivate among your working force a spirit of fraternalism and mutual helpfulness. You will never get best results if the only motives that prompt your employes is that of wages. Make them feel that they are indeed a part of your organization. That its largest success cannot be secured except with the co-operation of every employe. To this end I urge the holding of meetings at stated times at which as nearly all the employes as possible shall be present. Talk over the affairs of the company frankly. Let each point out how improvements may be made. Let every one here be on an equality. See that every suggestion from whatever source has due consideration. Make each one feel that he is an *intelligent* part in an arrangement of parts prepared for systematic co-operation. But, gentlemen, let me warn you not to permit a spirit of familiarity to creep into your fraternalism. Remember that breeds contempt. Do not have *pets.* Don't have confidantes, especially of the feminine persuasion. Let every employe feel that he is of just as much importance in his place, however humble, as any other employe in his place, however exalted. Remember that mutual respect comes always before mutual helpfulness. Carefully keep your own proper place in the company and require every one else to do the same.

Having, then, a well formed company, an effecting working force, and a well constructed plant, the remaining problem of the relations of companies to each other, ought to be of simple solution. But here ignorance, avarice, cowardice and general cussedness have held almost universal sway. With hatred of monopoly by the people, knowledge of local conditions, influence of a local investment, economy in construction and operation, and freedom from local antagonisms—with all these and many other advantages, many companies have miserably failed

to even approximate measuring up to their opportunities. Petty quarrels, foolish strife and wasteful animosities have worked their relations with each other. Instead of prosecuting with vigor and sense their own business, they have busied themselves avenging fancied wrongs done by their neighbors. Why will men not learn the value of systematic co-operation? Why will a company not gladly become one of the "parts" by the arrangement of which all are "prepared for systematic co-operation?" The weakness of the Independent companies has been their ignorance as to their own strength. Having the strength of a Samson the Independent telephone man has been a pigmy in his relations to all except other pigmies. He has heard the roar of a lion in the bray of an ass. He has trembled and turned pale lest the Octopus should swallow him, forgetting that the people must always be reckoned with and that they are ever ready to aid him if he is worthy. But he must deal fairly with the people. The Octopus never does. And that's where the honest man comes in again. The people want a square deal. They won't get it except from you. If you don't give it to them the devil, i. e., the Octopus ought to get you. Now listen, friends; you never knew a company to fail that deserved to succeed. Now, honest, did you? I never did. And listen, you never knew men to talk about being obliged to connect with the Bell for self-protection until they had forfeited the confidence of the people and were in fact seeking protection from an outraged public. And listen again, you don't know a company that is giving really good service at fair prices that is not succeeding in spite of all the Bell can do, do you? I don't.

Now men, if these statements are not true, stand up and say so. If they are, go home with some iron in your blood, organize your company and forces right, give service, charge a good price, be Independent and succeed.

But I was to talk about organization as it has to do with relations existing between companies. Get the petty jealousies and desire for unfair advantage out of a group of companies and men of sense into them and I will effect an organization that will put the Octopus out of business so far as that group is concerned. Here again I commend to your thoughtful consideration the voting trust. Suppose that a majority of the stock of each company were placed either in one voting trust, or better still, in several voting trusts, some members of the boards of which were common to all. Could not this be made a most effective plan? To illustrate: We will suppose a group of ten companies. Let each company from among its stockholders select four members of a board of eight trustees, the other four being chosen from among the other nine companies, all of said trustees being selected with especial reference to their being careful, conservative, honest and trustworthy business men. A majority of the capital stock in each company would then be vested in the respective boards of trustees and trust certificates issued therefor. Require the affirmative vote of at least three-fourths of the members of each board for the taking of any action by such board. It would thus enable the members of any board outside that particular company to prevent action by the board that might be injurious to other companies in the group. I am sure that such a plan carefully worked out and put into effect through carefully selected men would be of incalculable service both as to the internal affairs of each company and also as to the relations of each to the others.

But if this plan seems too Utopian for present day conditions, although I am convinced that it is perfectly feasible and practical, we can at least form county or group organizations which can be made most effective and remove the condition of chaos heretofore existing. Let us then get rid of the adventurers, the incompetents, the "shakes," if you please. Let us put *men* in charge. Let us so arrange the internal affairs of our company as to make effort most effective. Let us harmonize our relations with each other. Let us, in short, be "prepared for systematic co-operation," and being prepared enter into such systematic co-operation with soul and spirit. Let stupidity give way to intelligence, ignorance to wisdom, avarice to honesty, cowardice to courage, anarchy to order, and problems that vex and perplex will disappear as the mists of the morning, and Independent telephony will behold the dawn of a new day in whose radiant sunlight it will expand, enlarge and develop into a full and perfect fruition.

The next paper to have been read was on "County Organization" by L. A. Herrick of Freeport Ill., but Mr. Herrick begged to be excused from making any remarks after what has been said. He said: "There is an impression that I am experienced in county organization, but I simply endeavored to help out and encourage and increase the spirit of harmony and good will, which is the thought along the line that Mr. Cheadle just gave."

The president stated in response that Mr. Herrick has been very successful in settling difficulties in his company; that his ideas have been expressed by the other gentleman, but that doesn't detract anything from the fact that he has accomplished a great work in that line.

The next paper was to have been given by Mr. J. S. Dailey of Chillicothe, but he was unable to be present.

The president appointed as members of the Committee on Organization, Mr. C. B. Cheadle, Mr. L. A. Herrick and Mr. W. H. Bassett.

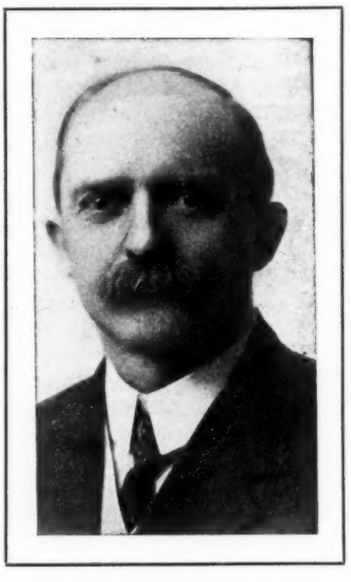
The delegates attended an enjoyable concert at the University in the evening.

In the evening an address of welcome was given by Hon. Owen Scott.

Mr. Cheadle then introduced Mr. Manford Savage, president of the association, who gave a response.

On Thursday morning Mr. G. F. Wombacher, of Mascoutah, read a paper on "How to Make Rural Exchanges Pay."

The proposition resolves itself into a few simple mathematical rules, the first of which is to organize a company and see to it that it is properly incorporated with sufficient capital stock to pay for good, substantial, practical construction. Make



Mr. Manford Savage.

the par value of your stock so that any person in ordinary circumstances can buy a share of stock, and get as much of your stock distributed among the farmers as possible, for if they have a share in the business they will have an interest in the success of the business, and if they have an interest in the business they will be interested in the service, and they will help you in numerous ways. Instead of being on the alert at all times to hand you a "kick," they will be on the alert to render some assistance, and instead of aiding to make things

disagreeable, they will go to see a neighbor who thinks he has a grievance, and by reasoning with him will get him to see "the error of his ways." Hire men to build your lines who know something about that particular branch of the business. Have your construction work done by properly qualified construction men, because that will save you many dollars which you would otherwise be compelled to pay for correcting mistakes ordinarily made by such fellows that know absolutely nothing about proper construction. It pays to build metallic lines. The extra wire does not cost so very much, either, compared with the numerous advantages. If you must build grounded lines, build them right. Do not buy cheap material. Good material will be found to be very much the cheapest both in service and durability.

Charge a reasonable monthly rental for the telephone, not less than $1 per month for a residence telephone, and not less than $1.50 for a business telephone and as much more than that as you can get, and make it a point to get the monthly rental. The terms, etc., must be formulated by the different companies to best conform to the conditions in their respective localities. There could hardly be a fixed rule that would prove applicable to every locality. Be particular to keep your lines and instruments in good condition, and see to it that all trouble is cleared without needless delay. Give your subscribers no cause for complaint. Show them that you are anxious to give them an equivalent for the money that they are expected to pay and do pay, and your system will be a success.

We began business three years ago and built a new system from the ground up. The only encouragement that we had was a very bitter opposition from the Bell Telephone Company, who gave us to understand that this earth is entirely too small for us to find any room upon it, and that, in fact, it belonged to them, and that they would therefore regard us as trespassers. We, of course, treated the Bell opposition with all due respect, but paid not the least attention to them, following out the theory that we had plenty to do in minding our own business. Their frantic efforts along those lines sometimes caused some merriment, but not on their part, and from the bold, defiant demeanor with which they confronted us in the early stages of our existence, their business began "slipping" and did "slip" until today they have only a fragment to hold to, and even that is still "a-slipping," and they have a system left with scarcely any subscribers. By comparison, the ratio in our favor is about 40 to 1, and it is only a question of a short time until they will be compelled to retire permanently from the field, since their business now does not pay the operating expense. It has been, in our case, only a case of "the survival of the fittest." And it is an old-fashioned idea of mine that that is the ultimate solution everywhere. The one who wins, must win upon his merits. True, there is a certain amount of sentiment which enters into the business, but even sentiment will be tempered according to merit, and public sentiment, as a rule, is swayed by superiority in any material point or thing.

In the three years we have built four exchanges, with a capitalization of $20,000, and have sold every share to local people. We have no bonded indebtedness. We paid a small dividend last year and will pay a larger one this year. Our lines are all metallic, and we limit the number of subscribers on our rural lines to ten. Our construction has cost us about $54 per station, and our operating expense costs us less than 45 per cent.

The president asked Mr. Wombacher if they can make any money furnishing rural subscribers metallic lines at $12 a year.

Mr. Wombacher replied: "I don't know how it would work out with other people, but we are making money. We paid dividends last year and will pay bigger ones this year, but are not paying any fancy prices to the officers."

The question was asked as to what they did for depreciation if they had a sinking fund.

Mr. Wombacher replied that they arranged for a sinking fund.

Mr. Cheadle then made a few remarks on the proposed clearing house.

The president then introduced Mr. J. B. Hoge, who gave a short talk on the question of insurance. He stated that the

Mr. J. B. Ware.

Telephone Fire Insurance Exchange has opened an office in Chicago and is trying to get a business established that would give them a policy or policies with each company in the United States, and wanted to place Independent telephone interests closer together through their method and other movements all along the same line. He told something of the rates, etc., and distributed application blanks which he desired the members of the association to fill out and send to his company in Chicago so they might get into correspondence.

The next speaker introduced was Mr. Ware, of Chicago. He said, in part, on the

INTERNATIONAL ASSOCIATION.

I have been asked three or four question since coming down here, so will undertake to explain a few things to you which I hope may not only interest but instruct you. One question was regarding royalties paid by the Bell company. When the telephone became a commercial production the Bell company licensed individuals and corporations to enter into the telephone business and develop the territory, territory being assigned. As a rule, perpetual contracts were entered into. They paid a royalty of $14 a year for the use of the telephone, not during the life of the patent, but perpetually, $7 upon the receiver and $7 on the transmitter. Later, to enforce the contract, the Bell company, in order to make a long term lease right in the territory, insisted upon a majority of the stock in the local company. When the patent expired in 1893 or 1894 and it was found that the people themselves were going to undertake development, the royalty was gradually decreased, although conditions were changed.

What the people of this country have received in the way of improvements and quality of service have been received through your efforts and the efforts of other gentlemen who have been forced out of the circuit. The competition among the manufacturing establishments in the Independent field made it possible for us to have what we have today in the way of quality of apparatus. As a result of competition, improvement in quality of service and reduction in rates, there has grown through our country a large increased use of the tele-

phone. The growth of the Independents during the past five years has been faster than the Bell.

What has been accomplished in the organization of the Independent companies, while it has been large, it has been accomplished through co-operation. The time has come when it is absolutely necessary that, instead of being disconnected, each company standing by itself, we should have an organization binding us together which will enable us to know that the Independent system is to remain an Independent system. There have been numerous meetings held undertaking to solve the problem, to know what to do.

Mr. J. B. Hoge.

It is necessary for the Independents to make a change in their policy, and it is the consensus of opinion that one of the most practical things to be done was along the line Mr. Woods referred to yesterday.

Mr. Cheadle made a report of the committee who had been appointed to discuss the matter of organization, which was as follows:

Your committee appointed to consider and make recommendations relative to the plan of organization outlined by Mr. Frank Woods, of Lincoln, Neb., at the session of the convention yesterday, respectfully reports that they have considered the matter as fully as the time allotted would permit, and recommends the adoption of the following resolution:

Resolved further, That this convention appoint a committee lar convention heartily approves the general plan outlined for a closer union of the Independent telephone companies of Illinois and the adoption of the plan in its general terms outlined by Mr. Woods.

Resolved further, That this convetnion appoint a committee of five persons, of which the present president of the convention shall be one, whose duty it shall be to work out in detail the plan above mentioned with the view of making it the most effective possible, and to conform to the laws of the state of Illinois; and that said committee be empowered to take the necessary steps to incorporate a company and complete the organization thereof and solicit membership therein.

A motion to adopt the resolution contained in the above report was carried.

Mr. Cheadle then moved that the committee when appointed be instructed to assemble at the earliest possible date consistent with due deliberation of the subject, important as it is, and take action at the earliest date consistent with such deliberation and consideration of the subject. The motion was carried.

The committee then appointed consisted of Mr. Bassett, Mr. Cheadle, Mr. Herrick, Mr. Irwin and the presiding officer, Mr. Savage.

Mr. Olwin offered the following resolution:

***Resolved*, That we, the Independent Telephone Association of Illinois, request the International Independent Telephone Association to take up the question of providing for a proper and correct count of Independent telephones in use in the United States before the next national census shall be taken.** It carried.

A motion by Mr. Cheadle that further action looking toward the forming of a clearing house be deferred and referred to the committee on organization, carried.

Mr. E. D. Glandon, of Pittsfield, explained that the failure of the association to get down to business on the proposition of establishment of rates and proper clearing facilities last year necessitated such action on the part of individuals, so a body representing probably one and a half millions of properties in the western part of this state got together, put up some money and did some work, in order that they might make their rates uniform. In explaining results he said:

"There are something over 30,000 rates quoted on these three sheets. Those 30,000 rates cover our rates between centers only; no local rates are quoted there; no rates under 50 miles are quoted there. Those rates are made on a 6/10 of a cent per mile basis. Those rates do not agree with any other existing company. No other company adheres to the 6/10 of a cent basis. The instruction was to make this tariff sheet on a 6/10 of a cent basis per mile, and I made the construction of that instruction as liberal as possible. From 50 to 58 miles a 35 cent charge is made. You will notice that at 50 miles at 6/10 of a cent is only 30 cents, but we charge 35 cents from 50 to 58 miles; 40 cents from 58 to 66 1/3 miles."

Mr. Wombacher reported for the committee on nominations for officers of the association, and submitted the following:

For president, C. B. Cheadle, of Joliet.

For vice-president, F. C. Woods, of Galesburg.

For secretary, M. B. Farwell, of Bloomington.

For treasurer, W. W. Holliday, of Jacksonville.

These officers were elected.

There was some discussion as to the duties of the committee on organization, and it seemed to be understood that they were to go ahead and formulate plans, prepare all necessary application blanks, etc., and then call a meeting of the association in the near future. A motion by Mr. Wombacher that when the association adjourns it adjourns subject to the call of the new officers, they to state place and time of meeting, was carried.

Brief statements were made by Mr. Cheadle, incoming president, and Mr. Savage, retiring.

Mr. Savage said: "If I were to say anything, it would be this: it would be a plea, if I may term it that, for fidelity, for standing by each other, not theoretically or sentimentally but practically. You gentlemen may not understand it, but you have to do that for business reasons; the lines are coming closer and closer and you can't be in the Bell and Independent both. You will be forced to go into the Independent heart and soul. Every dollar you have or every aspiration you ever had as telephone men come by virtue of the Independent movement.

"Now, you owe something in the way of loyalty. I have taken this position, that I owe absolute loyalty to my people. There is one thing we fear Independent telephone men do not understand, and that is the duty we owe to the people in establishing a competing system to the Bell telephone company. Do you know you are getting yourself in a place, more and more, where the courts are going to make you be loyal, and I say, as a lawyer, that it is not only going to be a civil liability, but in the near future it will be a criminal liability. You have some stockholders in your community who are flirting with the Bell, who some day may be looking through bars or be subjected to a fine on account of carrying out things contrary to the laws. We are right up against it, and the time

has come, not only for sentimental reasons, not only on account of loyalty to the people, not only on account of business reasons, but we will have to unite to protect ourselves against ourselves, if I may use that expression. We want to protect ourselves and our stockholders who don't understand these matters, and our officers who don't understand the criminal liability, as well as financial laws. Let us all get together because it is inevitable, because the Bell is determined to wipe us out of existence."

The following were elected as executive committee: W. H. Bassett, O'Fallon, Ill.; L. A. Herrick, Freeport; Mr. Savage, Champaign; W. W. Holliday, Jacksonville; E. D. Glandon, Pittsfield; the president and secretary are ex-officio members.

Aerial Telephony.

One of the unique features of the Hudson-Fulton celebration in New York was the installation by the New York Telephone Company of a telephone in a captive balloon 1,000 feet above the ground. This balloon served as a lookout station from which the observer aloft could note any accidents, such as collisions of river craft, etc. the wire ran down the anchor rope and the telephone was connected to the nearest exchange, thus rendering it possible to send a message to land or water ambulances so that aid could be rushed immediately to the point where it was needed.

GOOD ADVICE.

If you have a word to say,
Say it.
If you have a part to play,
Play it.
If you have a battle to fight,
Fight it.
If you have a letter to write,
Telephone it.

—Chicago Tribune.

Practical Questions and Answers

Wiring of Intercommunicating Set.

We would like to find out a good way to wire an intercommunicating system. We shall be obliged to install one soon, in a hotel, for 25 telephones and we want to be provided with a good circuit and instruments. We would like to know how to arrange a system for common battery talking and common battery signaling; also for common battery talking with magneto signaling.

An suggestions will be appreciated.

Fig. 7 illustrates the circuits of a common battery intercommunicating system, which may be made up of as many stations as desired. It takes one pair for each station, and a common pair for ringing. The keys shown may be obtained of almost any manufacturer of telephone apparatus. The plunger springs are operated by a push button. When pushed part way down the long curved plunger springs are pressed outward into contact with the outside springs and locks there. When the button is pressed further it causes the right hand springs to touch the spring on the ringing wire. On releasing, it snaps back into the former locked position, with the ringing spring clear.

To call any station the button bearing its number is pressed further it causes the right hand springs to touch flows from the ringing battery to the ringing spring, over one side of the pair of the called station to the hook of

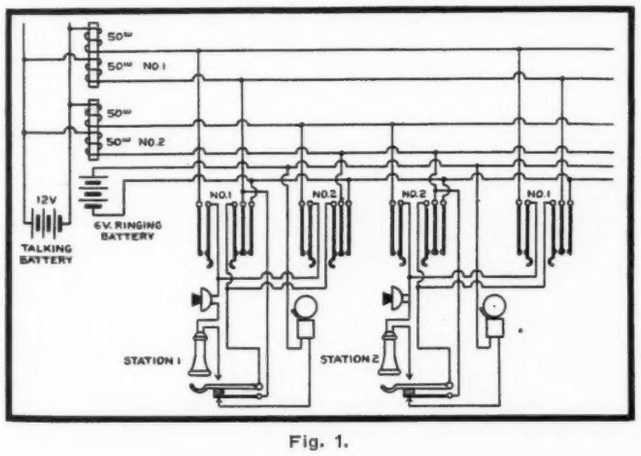


Fig. 1.

the called station, through its botton contact, to the bell and back to the ringing battery over the other ringing wire.

When the pressure is released the ringing spring is cleared from contact and conversation can take place, both telephone sets being bridged across the one pair, current being fed through the retardation coils at the left. The pessing of any button releases any other button which has been previous used.

Fig. 2 shows the same scheme but with a magneto generator substituted at each station.

Success in an intercommunicating system depends, in

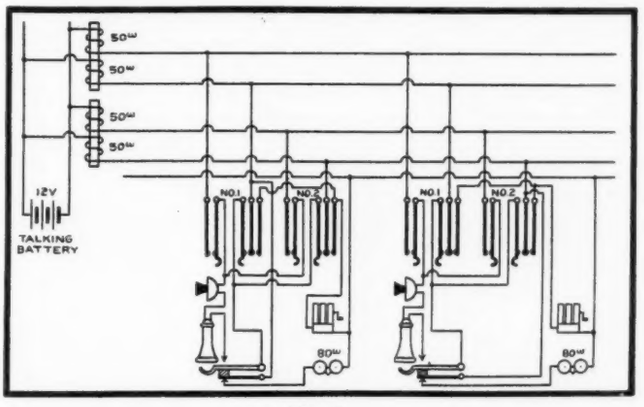


Fig. 2.

the first place, upon obtaining a switch built in first class shapc, and high grade cable. Then it depends upon the care and skill exercised by the installer. If all material the first place, upon obtaining a switch built in first class income and more in maintenance. For a 25-station system the difficulty of locating any trouble which may occur is so great, and the annoyance when trouble exists, that it is generally considered to be better to put in a branch exchange switchboard and make connections, when required, with cords and plugs. For a system of this size attendance at the board would be a supplementary duty for some employee, not taking his entire time.

Remodeling Telephone Generator for Gas Engine Ignition.

I have a 4-bar power magneto ringing machine giving alternating current which I wish to rewind to give direct current to be used in connection with a spark coil to ignite a gasoline engine. This arrangement is to replace or be an auxiliary to a bank of dry cells. I cannot recall the arrangement of the winding of the armature to get the direct current, and will thank you to give it to me. One lead from the machine comes from the frame, and the other is from a round copper commutator, a complete ring, which is insulated from the shaft by a fiber bushing.

There are machines on the market of about this size which are used for the above purpose. Please give me the proper information for th winding of the armature, stating the size of wire, etc., and advise if it would be proper to use a lamp of low voltage in series, or if the spark coil in series is sufficient protection for the machine.

The arrangement for getting direct current from the armature of a telephone magneto generator is shown in Fig. 3. A 2-part commutator must be fitted onto the end of the armature shaft as indicated in the cut. One end of the winding is attached to one segment, and the other to the other segment. The open spaces between the two segments are ordinarily placed so as to be in a vertical

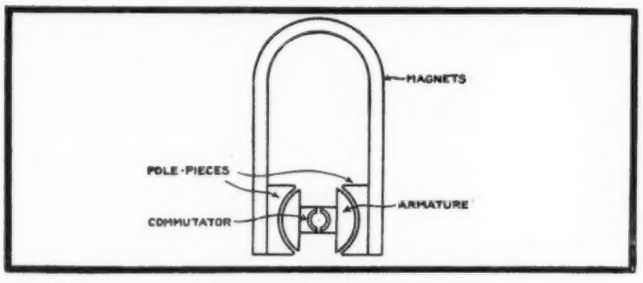


Fig. 3.

line when the poles of the armature are in the recesses of the field poles. Two brushes must be fitted to rest on the commutator as shown in Fig. 4 so that each brush will be slipping from one segments to the next when the armature is in the position shown in Fig. 3.

You may have trouble in getting both wires through the hole in the end of the shaft, and both must be well insulated.

We can not give you the exact size of wire to use as the field strength and dimensions and speed of the armature are not known. When running at its lowest speed the armature should give at least 4 volts—6 is better and more reliable. Use as large wire as possible, bearing in mind that you must get the voltage. This is to keep the resistance low. Wind on a trial coil or two, beginning with No. 24 or 26, and from the results you can judge what changes you need to make, if any. You will not need a lamp in series with this machine. In fact, it would reduce your chances of success.

Advice to Managers.

Mr. B. F. Wasson, president of the National Telephone & Electric Company, Clinton, Ill., has issued a letter of advice to managers which contains so many interesting points that it is here reproduced:

You, as managers, are held responsible for all that may occur in your district. If you go out to do a piece of work and find that you have left the most important material at the shop you have not only lost the time you are being paid for, but you have given to the subscriber the impression that you are not making good.

If you have a poor, ignorant, careless, six o'clock and pay day lineman or trouble shooter he is not so much to blame; you may tell and tell him, but you have to watch and watch him if you wish him to accomplish anything. If you have no system, your shop is topsy turvy.

You put in a half-day finding something you want. I go into some of your store rooms and find everything labeled, in its place, so that it could be found by a stranger, while in others I find everything mixed up so the oldest man on the job cannot find what is wanted.

The shop and work bench should be clear of all unnecessary material and the tools in their places, and each man should be taught that by the superintendent the first day he enters the shop. I find that many of the men, when sent out to do a piece of work, leave material in the store room and tools in the shop that must be on the job. Time is lost in going back after things, and so the work stops from thirty minutes to two hours, according to location.

We also have men who cannot see anything, and must be told every time they should move. You hear foremen say, "John, help lift that pole." At the same time five are tugging away, but John has not waked up. It becomes very monotonous to be saying, "Jim, I am ready for the cross arm or lag bolt," or this, that or the other when you are at work. It is, "Jack, get a tamper and help tamp that pole"; "Joe, take the pike poles to the next hole"; "Bill, do this", or "Mike, do that", all day long, because men do not use their heads, and sometimes we think that if the men could think, they would be foremen and not underlings. We know it is quite a worry to the manager or superintendent to have all this to put up with, but it is the experience of all superintendents all over the world.

It is quite necessary for the man at the head of the gang, no matter how small the gang, to have some "get up and go" to him. If the foreman must stop and wait until the man comes in the morning to commence work, the man under him will wait a little longer, and then all will stop and fill their pipes and look the bunch over for a match. And then the foreman has a new story to tell which he had heard the night before, and you find that you are using the time you have sold to some one else to no purpose, and have educated your gang the wrong way.

If you find yourself out on the street spending your time talking to some one with whom you have no business in relation to your work, you may expect your men to do the same. Men who kill time on you had better be out of the job, because people will say "Well, that company has a lot of loafers," and another will say, "It is no wonder they never get anything done. I ordered a telephone three weeks ago, and it is not in yet."

Being the purchasing agent, I find that some superintendents let their material run out before reporting, and at times order material when they do not need it, having plenty on hand.

Now, the thing to do is to put new blood into the help where it is needed, and this can be done by the manager carrying out these suggestions and changing what has fallen into

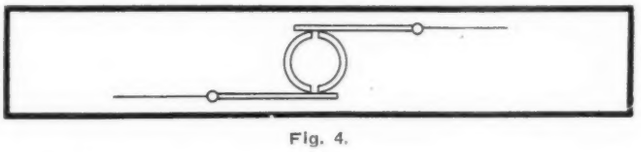


Fig. 4.

the rut so deep that no one can see over the top. A manager who sees and cares for the little things in the way of economizing, helps to pay his salary.

The manager is the whole thing, and while he does not have the whole thing to do where he has help, he has plenty to do in seeing that the work is done promptly. Never promise a subscriber to do something for him at a certain time unless you can get it done on time.

And we notice that if you will call on subscribers now and then and ask about the service, you will find that you have gained the confidence of your subscribers. They think you are interested; besides, you may find a mouthpiece gone, or a received shell broken or something else to note and have repaired. If a subscriber is continually complaining of his telephone, change it and see if the line is O. K., as some subscribers get it into their heads that the telephone is wrong, because some lineman said it was, and nothing will satisfy them until a change is made. Sometimes you will find that a subscriber does not want to pay any longer, and at the same time is backward about ordering it out.

So we might go on for a whole volume, and not tell all that a manager or superintendent may do to make his exchange a success.

The Telephone in the Courts

Conducted by A. H. McMillan

Liability to Housemover who Climbs a Pole.

In Floyd county, Georgia, Rounsaville Brothers were owners of a private telephone line, the poles of which were placed along the public road. Mid Morris, while moving a house across the road, found it necessary to remove the telephone wire. He placed a ladder against one of the poles and when he had climbed to the top of the ladder, about twenty feet above the ground, the pole broke and he fell, suffering severe injury. The pole was rotten and in an unsafe condition, both under and up to about two inches above the ground. Morris sued the owners of the pole, alleging that they gave him permission to climb it. The defendants demurred to his petition, and the suit was dismissed, the judgment being afterwards affirmed by the Supreme Court of Georgia.

The plaintiff did not allege that the owners of the pole made any statement to him regarding its condition or failed to warn him of its condition. The only acts of negligence alleged on the part of the pole owners were that they had no right to erect the poles alongside the road, and that they knew this pole was in a rotten condition. The Supreme Court held that, even though the defendants had no right to erect the pole where they did and allow it to stand there in a rotten condition, these were not acts of negligence with reference to one climbing the pole for the purpose of removing the wire solely for his own benefit. There was no duty, so the court said, on the defendants to keep their poles in a safe condition for persons to climb in order to remove the wires therefrom, so as to move a house across the highway. Morris vs. Rounsaville Bros., 64 S. E., 473.

Interference by Proximity of Electric Light Wire.

We have constructed on a certain street 30 ft. poles open wire. The electric light company came along and built through and over us with 35 ft. poles and strung an arc circuit. It causes noises on our lines so much that it is almost impossible to use them at night.

What rights have we in this connection and has the electric light company a legal right to interfere with our property in that proximity of their arc wire, causing us the damage of induction.

Can you cite any New York State cases similar to this?

Between electric light and telephone companies, the one first rightfully in possession is entitled to protection against interference by induction on the part of one subsequently erected. For any damages caused by induction, the later established company is liable, and the injured company is entitled also to an injunction to restrain the electric light company from stringing its wires in proximity to telephone wires. On these principles the electric light company in your case has no right to maintain their wires in proximity to your own. We cannot cite any New York cases similar as none seem to have ever been decided. See Nebraska Telephone Co. vs. York Gas & Electric Light Co., 27 Neb., 284; 3 Am. Elec. Cases, 364; McMillan on telephone law, Sec. 139.

Enforcing Payment of Bills.

Public utilities are entitled to avail themselves of reasonable means to enforce payment of bills, either requiring cash deposits or securities, or by discontinuing service when bills are not paid as required by the rules of the company.

A decision to this effect has been announced by the Wisconsin Railroad Commission in the case of Oscar J. Berend of Milwaukee against the Wisconsin Telephone Company.

The petitioner, Berend, a real estate dealer, had trouble with the Wisconsin Telephone Company over the amount of money supposed to be in a nickel slot telephone, and refused to pay the telephone bill.

The company discontinued the service, and Berend brought mandamus proceedings in court, was defeated there and told to go to the Railroad Commission, which he did, but he changed his demand for resumption of service to one for damages in the sum of $10,000.

The petition was dismissed, but important principles were laid down in the decision. Among other things, the commission refers to the fact that the payment of all bills due to a utility company is to the advantage of the entire community as well as to the public utility.

It also held that to require every consumer to give security would be to assume that every consumer is dishonest and intended to escape payment, which the commission thinks is not a necessary conclusion.

Exclusive Features on Franchises.

I have an exchange of some 225 telephones in this city and am operating under a franchise granted in 1899, part of Sec. 2, reading as follows:

"Said permission shall be exclusive for said period, subject to the following restrictions, to wit: First, it is hereby intended not to affect any private telephone now in use in this city, or which may hereafter be erected or used, and is also not to affect any long-distance telephone entering or passing through this city."

This franchise was given for twenty years and I was to pay the city 5¾ per cent of the gross earnings.

This contract was kept for a few years by both parties and then the farmers began building lines into this city and later put in a switchboard with single lines wholly within the city, switching them the same as any other exchange. The subscribers are assessed, while non-subscribers are charged tolls for talking, but in other ways the exchange is operated the same as mine.

Their total number of poles exceeds mine by one-half, though they haven't anything like the number of subscribers within the city.

I paid the 5¾ per cent for some time after this began, but objected to the council, and they promised to do something about it.

I have suggested that the Council grant a new franchise cutting out this exclusive clause, as it is my information that no franchise such as this one is legal, and fix the charge at 2 per cent and also make some small assessment against the other companies doing business here in proportion to their business. As it is they pay nothing whatever. The resultant crosses from having such a class of wires and poles in the city is as much expense as the per cent due the city, according to the original contract. These people have used unsightly native poles, etc., while I was restricted in these matters, and altogether, I don't feel fairly treated and most of the council agree in that, but, as a rule, dislike to antagonize the farmer by restricting him. The Council seem friendly, but yet the City Attorney has now brought suit on the 5¾ per cent.

There isn't any exchange paying more than the 2 per cent and this amount is charged only in the cities so far as I know, the smaller towns scarcely charging anything. The position I take is that it would not be possible to hold the city to the exclusive franchise because of its not being upheld by the courts, and therefore the only thing that can be done is to adjust the matter in a fair way, and not charge one company an excessive price and allow another to operate for nothing. Is this well taken, and altogether what do you advise?

You are correct in the position that the city cannot be held to the exclusive feature of your franchise, unless your common council had express authority to grant exclusive franchises to telephone companies. This is probably not the case. Am. Teg. & Tel. Co. vs. Morgan County Tel. Co. (Ala.), 36 So., 178; Muskogee Nation Tel. Co. vs. Hall, 118 Fed.. 382.

Therefore the best plan for you is to adjust the matter with the council, if possible. We like your suggestion to secure the granting of a new franchise eliminating the exclusive clause, and fixing a lower rate on gross earnings. You do not state what authority the rural company has for coming into the city. Possibly it is now too late for the council to impose any charge upon them.

News of the Week

Bell Comes Out in Open With Report of Western Union Merger.

Following the exclusive announcement in last week's TELEPHONY, of the completion of a deal whereby the American Telephone & Telegraph Company obtained control of the Western Union Telegraph Company, a statement was given out to the general public on Tuesday, November 16. Newspaper reports speak of a new billion dollar corporation. The financial summary of existing conditions accompanying the newspaper reports is as follows:

"The American Telephone & Telegraph Company was incorporated February 28, 1885, in New York and prior to 1900 owned only the long-distance lines of the American Bell Telephone Company, but in March, 1900, acquired the entire property of the Bell company, including real estate, which up to January 1, of this year, had grown to include over 5,000 exchanges in the United States and Canada, with over 8,000,000 miles of wire and more than 98,000 employes.

"The authorized capital stock of $300,000,000 with $180,587,000 outstanding was increased to the former figure, from $250,000,000 January 7 of this year."

In a statement purporting to reveal the purpose of the merger, President T. N. Vail, of the A. T. & T. Co., said:

"From the very commencement of the telephone business it has been thought that a close co-operation—the making of one business the auxiliary to the other business—would give additional public service, as well as result in large economies both to the public and to the companies.

"There is much to be gained by the joint construction and maintenance of plant, and by its common use to the greatest possible extent, but the greatest advantage would follow the placing of millions of telephone subscribers in close and reliable connection with the receiving and and dispatching offices of the telegraph companies.

"While some provision for this after a manner exists today, a lack of harmony and co-operation between the companies and an inability to agree on methods of fixing responsibility has limited its utilization to cases of absolute necessity.

"The harmony and co-operation necessary, it is believed, can now be established and the resulting advantage made available for the public.

"The telegraph service is analogous to the mail service in that it is the collection, transmision or transportation and delivery of correspondence, the difference being that the mails transport the actual communications, while the telegraph transmits the contents of the communication from office of origin to office of destination. From the collection to the delivery of the correspondence the entire work is done by the staff of the telegraph company.

"The telephone, on the other hand, enables persons too distant from each other for ordinary conversation to engage in personal communication with each other by placing at their disposition for a time a telephone circuit.

"While there is a common feature in the use of wires strung on poles or in cables, the similarity ends there; the circuits and methods used for the telegraph and the telephone are entirely distinct and different, and each business requires its special equipment, operating force and general business organization.

"It seems not only to be god policy but a duty to increase the service and advantages to the public by utilizing present unutilized possibilities, and at the same time benefit property and increase revenue."

Reports of operations on the New York Stock Exchange show that when rumors first became current there that the deal had been completed, and would be announced during the day, Western Union stock went up somewhat, but sold off rapidly toward the close of the day, losing three points from its high mark.

Although the statement is made that the A. T. & T. Co. acquired a substantial minority interest, and the Gould voting rights, it is well known that the A. T. & T. Co. has absolute control of the finances and policy of the Western Union. It is a remarkable thing that the minority stockholders should entertain the attitude reflected in the drop in price of Western Union stock, when it is considered that Western Union paid scrip dividends in panic times, while the A. T. & T. Co. has been paying 8 per cent. At the same time A. T. & T. Co.'s shares went up to 144⅜, the lowest sale of the day being at 142¾. This looks as if President Vail had driven a mighty close bargain—at least as far as the minority holders are concerned.

The magnitude of this undertaking, if the courts allow it to proceed, may well cause the public to pause and consider.

Possibly it may be to the tremendous advantage of the Bell interests, but what of the benefits to the public at large. Will it mean lower rates and better service? The history of monopolies does not indicate that it will. On the contrary, the public is likely to find itself exploited by one of the greatest aggregations of capital ever created.

The public interest demands that the legality of this combination be taken up with all speed, for in effect it will do more to limit competition in the field of communication than any move yet attempted. Should competition wane, through the creation of a monopoly, the only remedy is regulation, and it may well be questioned whether our government will be able sucessfully to cope with a monopoly so rich, so vast and so complex. The past experience of the Independent telephone interests in compelling the Bell companies to give lower rates and a greater development than the public otherwise would ever have enjoyed, is a gage of their present opportunity.

From a purely engineeering standpoint the announcement raises many interesting and complex problems. The Western Union management has long been regarded as unprogressive in the extreme. The introduction of the telephone to cheapen telegraphic transmission may be regarded as one of the obvious possible economies. The "Morse" operator is in the class of skilled labor, and the trend of wages has been ever upward. Telephone transmission is cheaper, faster and more flexible. The Western Union plant will have to be largely reconstructed to adapt it to telephone transmission, but the ultimate economy in cost, with the possibility of simultaneous telephonic and telegraphic transmission, is obvious.

The present policy of consolidation among the Bell companies, taken in conjunction with the mergers now intended, may be regarded as necessitating a thorough reorganization of the Bell operating forces. This of itself is a great problem, and under their methods of training men in the past, it may well be wondered where they will find the master minds to direct the huge branches of the new organization economically and effectively. Their work in the past, due to distant control and lack of harmony, has often been incompetent and extravagant, and their methods have not been such as to develop natural ability or to train men to think and act of their own initiative. The problem of organization and management is indeed one of the greatest things to be considered in such a stupendous combination as this one which we see now forming.

Recent conditions in Ohio have shown that in unsettled times Independents do not lose their nerve. As a matter of fact, it matters little to them whether they are in competition with a $300,000,000 or a $150,000,000 corporation. They have demonstrated their virility, and the public will stand by them. Now, more than ever, with this increased power, the Bell company will be liable to incur public ill-will and we should not be surprised to see subscribers flock to the Independent standards solely through fear of what monopoly might do. With a strong organization, such as is being perfected in places where it does not exist, and with adequate provision for high grade publicity, the Independents can insure the discontinuance of all rate cutting tactics, and place themselves in a stronger position with the public than they have ever occupied. Now is the time for the progressive men in all sections, connected with companies great and small, to get together and make plans for solidification. If the big financiers of Wall street see a chance for such tremendous money-making in the telephone industry, it shows the opportunity open to the Independents, who can control the situations in their respective localities.

It is safe to predict that the biggest crowd which has ever assembled on such an occasion will be present at the convention in Chicago December 7, 8 and 9 to talk over plans.

Program for the Annual Convention of the International Independent Association, Auditorium Hotel, Chicago, December 7, 8, 9, 1909.

Following is the detailed program for the next International convention:

Monday, December 6.

11:00 a. m.—Meeting of executive committee.
2:00 p. m.—Meeting of advisory board.
4:00 p. m.—Meeting of committee on registration.
5:00 p. m.—Meeting of sergeant-at-arms committee.

Tuesday, December 7.

10:00 a. m.—Convention called to order.
Invocation.
Address of welcome, Hon. F. A. Busse, mayor of Chicago.
Response.
President's address, Hon E. H. Moulton, Minneapolis, Minn.
Officers' reports.
Appointment of committees.
Report of committee on credentials.
Announcements.
"Technical and operating conference plans." Gansey R. Johnston, chairman.
Adjournment.

Afternoon.

2:00 p. m.—Technical and practical conference.
Gansey R. Johnston, Columbus, O., in charge.

Wednesday, December 8.

10:00 a. m.—State and provincial association reports.
11:00 a. m.—"The Insurance Exchange," Mr. J. B. Hoge, Cleveland.
"Is the Telephone a National Monopoly." Mr. Frances Dagger, Toronto, Canada.
"Continental Telephone & Telegraph Co." Judge Matt G. Reynolds, St. Louis.
"A Strong Financial Institution." Hon. E. H. Moulton, Minneapolis, Minn.
"Proposed Changes in Association Organization and Constitution." Frank H. Woods, for auxiliary committee.

Afternoon.

2:00 p. m.—Operating and technical conference (continued).

Wednesday Evening—Banquet (Probably).

7.00 p. m.—Banquet, Auditorium Banquet Hall.

Thursday, December 9.

10:00 a. m.—Other papers and discussion.
Report of committee on resolutions.
Report on constitution.
Reports of special committees.
Report of nominating committee.
Election of officers or directors.
New and unfinished business.
Adjournment.

Bell Company Prevented from Raising Rates After Merger.

The first chapter in the injunction suit of the Ozark Bell telephone company against the city of Springfield, Mo., to prevent enforcing telephone rates fixed by the city ordinance, was ended in the report of Referee Willard P. Hall, that the company is bound by the rates fixed by ordinance under which the old Home telephone company operated. The Bell company absorbed the Home company and increased the rates. Four years ago the telephone company obtained a temporary injunction against the enforcing of the city ordinance, on the ground that the rates fixed by the city were confiscatory. Judge Hall holds that the reasonableness of the rates is not to be considered as an issue in the litigation. The telephone company, it is said, will carry the litigation into higher courts if Judge Philips affirms the report of the referee.

Anti-Consolidation Argument Before Pennsylvania Railroad Commission.

The Pennsylvania State Railroad Commission, November 10, heard argument upon the Consolidated-Bell-Slate Belt dispute, the most important telephone controversy which has ever appeared in Pennsylvania. The Railroad Commission has not as yet made any decision, but disposition of the case may be made at any time. The Consolidated had a long-distance traffic agreement with the Slate Belt Company.

It charged that the Slate Belt surreptitiously entered into a similar agrement with the Bell company and forthwith broke relations with the Slate Belt Company.

It is charged that the Bell alliance is not only a violation of contract but is also a violation of the anti-trust laws.

It is doubtful if the Railroad Commission can make final disposition of the case, and it may eventually find its way into the courts. The point was first raised by the Consolidated in the attorney-general's office of Pennsylvania, in the nature of quo waranto proceedings, but after a full hearing in the matter Deputy Atorney General Jesse E. B. Cunningham held that the legal department had no jurisdiction over the case as matters then stood and dismissed the proceedings with the suggestion that the question be laid before the State Railroad Commission. That was last May, and the complaint was subsequently filed with the Railroad Commission.

The powers of the Pennsylvania State Railroad Commission are limited to "recommending." It can make such recommendation as it may see fit in any proceeding brought before it, but if the parties to the complant do not abide by the recommendation the Railroad Commission can do nothing except to certify the facts to the Attorney General and the Secretary of Internal Affairs for such legal proceedings as those officials may see fit. Up to the present time, however, no recommendation of the Railroad Commission has ever been ignored.

Missouri Manager Reports Progress

The Pioneer Telephone Company, operating exchanges in Waynesville, Crocker and Dixon, Mo., of which Mr. G. G. Youngblood is manager, has been doing much in the way of giving the people of that section the best service possible, within the past year. The three exchanges were entirely rebuilt. The company's prospects for the future are very encouraging. It contemplates adding another exchange to its list during this winter, and also expects to extend its toll lines to connect with the Rolla Telephone Company at Arlington, and to Sweedborg to connect with the toll line of the Noe Telephone Company of Richland. As these are connections which have been badly needed, the benefit to the subscribers will be great, and they will also help the company to develop new business.

Mr. Youngblood, in writing of the neighboring exchanges with which they expect to make connections, says that Mr. Noe, of the Richland Telephone Company, is kept more than busy installing telephones at the present time, which

indicates prosperous times for this company. He further states that the Rolla Telephone Exchange, under the management of Mr. Long, has four exchanges in first-class working order, and that another section of switchboard will be added to the Rolla board, and that about $8,000 has been apportioned for the building of new lines this coming winter and spring.

Consolidation of Two Ohio Independents.

The Columbus Citizens Telephone Company, of Columbus, Ohio, has purchased a substantial interest in the Washington C. H. Telephone Company, which operates all Independent telephones in Fayette county. The company operates 1900 telephones, with exchanges at Washington C. H., New Holland, Jefferson and Bloomington. The rural parts of the county are pretty well developed and the city of Washington C. H. is also well developed.

The entire plant will be overhauled and lines will be extended. Good long-distance connections will be made with the Columbus Citizens lines at the county boundary.

The proposed deal for the purchase of the Lancaster, Ohio, company is up in the air owing to the complications over the United States Telephone Company, which owns the Lancaster plant. It may be that the Columbus Citizens company will be able to close the deal later, but for some time there will be nothing doing in the negotiations.

A Happy Young Lineman.

The accompanying photograph, furnished by Mr. Sol Nighsonger, of Walla Walla, Wash., shows a young hopeful taking his first lessons in the telephone business. From

Young, but on the Job

the way he takes to the job it apparently will not be long before he will be entitled to a place among the expert tiers-in.

Detroit Mayor Bites Off a Big Chunk.

Mayor Philip Breitmeyer, of Detroit, is getting a good deal of publicity by a plan which he says will enable the city to secure practical control of the two big telephone companies now operating there. The mayor insists that if the city were to install a telephone exchange of its own, connecting the different city departments, the council would be in a position to dictate on what terms telephone companies could operate. The plan would be simply to refuse connections with city lines unless a reasonable rate were given by both companies.

"It is furthest from my intention to try to put either telephone company out of business," said the mayor, "but I believe under this plan we could compel both of them to be good all the time, as neither could successfully compete with the other if that other had exclusive connections with these important public offices. We could compel them to interchange connections for a small additional charge, perhaps 25 per cent of the present rates. Then a man who must pay both telephones would need to have but one, he could take his choice as to which, and he could have the benefit of both services by a slight additional rental. It would not kill competition betwen the two corporations but, rather, stimulate it.

"The city telephone exchange could at the same time be made the medium of intercommunication between the private telephone companies, my suggestion being an agreement with the present companies whereby the subscriber, by the payment of a small additional amount, say 25 per cent increase, could have the privilege of connection with the municipal exchange and through that with such subscribers on the other private telephone line as were paying for universal service."

Another Independent Consolidation in Montana.

Thaddeus S. Lane and associates, acting for the Inter-State Consolidated Telephone Company, have purchased from J. S. Haley, of Bozeman, Mont., all of the Independent long-distance telephone lines, with termini at Logan and Columbus, Mont. The purchase also included long-distance lines extending from Livingston, to Gardiner, Mont., Bozeman to Saylesville, and Bozeman to Chimney Rock.

The Inter-State Consolidated also acquires a controlling interest in the Bozeman Home Telephone Company and the Livingston Home Telephone Company. The Haley long-distance lines now connect with the system of the Montana Independent Telephone Company at Logan, and with the telephone system of the Billings Mutual Telephone Company at Columbus.

Expert Instructs Michigan Long-Distance Operators.

The long-distance business of the Independent companies in Michigan has come to be of such importance that the different companies, through the traffic association, have arranged to have a thoroughly experienced telephone man give instruction, at points throughout the state easily accessible to all long-distance operators, in the conduct of long-distance business. The plan has met with instantaneous sucess, and the only wonder is that it was not tried before.

W. S. Vivian, secretary of the state association, has been selected to do the work. His first meeting was at Alma October 26. On that date something over 40 long-distance operators of the Union and other companies in that part of the state were brought together in the offices of the Union company, and there received thorough instruction as to co-operation and the details of getting messages through properly. Since that date, much of Mr. Vivian's time has been taken up with this work. Classes have been held in Muskegon, Durand, Jackson, Lansing, Mt. Pleasant and other places, and in each instance operators have come from all the companies in the adjoining territory.

About three years ago the Independent companies began to see the necessity of doing something to provide uniformity in the method of handling long-distance business, and

the present plan is the result of the agitation then started. It is believed that it will be one of the best plans yet adopted to achieve uniformity. "What the operators need to learn especially," says Mr. Vivian, "is how best to co-operate with each other in getting messages through. In other words, team work is needed. I find the operators almost without exception willing, and preferring to do the work right than otherwise. The difficulty is in lack of education as how to handle it. Unquestionably the plan is a success."

The expense of carrying on the work is not assessed to the Association, but to each company making use of it.

Price of Copper Advanced on Rumors of Combination of Producing Companies.

New York despatches, dated Nov. 15, report a marked activity on the stock exchange in copper mining shares, following rumors of a proposed merger of the most prominent interests. The United Metals Selling Company, which markets the output of the Amalgamated, Lewisohn and Cole-Ryan properties, marked electrolytic copper up to 13¼c, ⅛c higher than last week's quotation. Reports of Tuesday show an additional ⅛c advance of the metal, making a gain of almost 1c since the consolidation rumors began.

Plans to Put New York State Telephone Companies Under Public Service Commission.

This week the Legislative Committee of New York State appointed to consider the amendment of the Public Service Commission law to include telephone and telegraph companies held a meeting at Buffalo, on Friday morning. Members of the committee are Senator Davis, of Buffalo, chairman, and Senators John Kissel, of Brooklyn, and James J. Frawley, of New York City; Assemblymen Edward A. Merritt, of St. Lawrence County; Artemus Ward, Jr., of New York City; John R. Yale, of Putnam County; Thomas B. Caughlin, of New York City, and J. Henry Walters, of Syracuse.

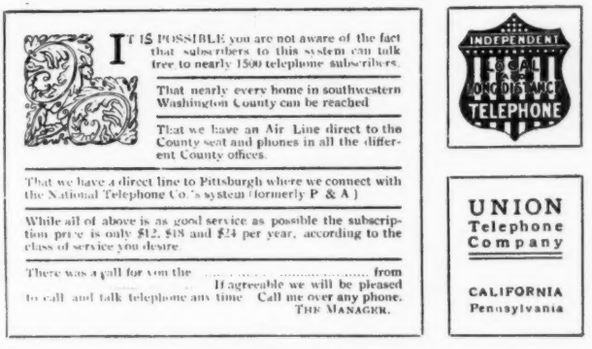
Bell Company Attempts to Negotiate for Purchase of Rochester Telephone Company.

The Rochester (N. Y.) Times of November 15 exposes an alleged attempt to purchase the Independent system there for the Bell telephone company. It is said that two men representing the latter were in Rochester last week, looking up the possibilities, and received no encouragement. According to the report, the plan was to buy up the Independent telephone company and conduct it with a simulaVtion of competitive conditions.

The Bell interests hope to do away with competition in New York, and then the business under control of the Public Service Commisison, and by its control, under cleverly drafted laws, hinder the formation of new telephone companies to enter into competition.

Advertising Independent Service.

The Union Telephone Company, of California, Pa., has adopted the policy of presenting to prospective subscribers conclusive evidence that they need an Independent telephone, for local and long-distance use. The illustration shows one of the postal cards which is an effective part of the campaign inaugurated by Manager H. L. Lamb.


IT IS POSSIBLE you are not aware of the fact that subscribers to this system can talk free to nearly 1500 telephone subscribers.
That nearly every home in southwestern Washington County can be reached
That we have an Air Line direct to the County seat and phones in all the different County offices.
That we have a direct line to Pittsburgh where we connect with the National Telephone Co.'s system (formerly P & A.)
While all of above is as good service as possible the subscription price is only $12, $18 and $24 per year, according to the class of service you desire.
There was a call for you the ..... from ..... If agreeable we will be pleased to call and talk telephone any time. Call me over any phone.
THE MANAGER.
INDEPENDENT
LONG DISTANCE
TELEPHONE
UNION
Telephone
Company
CALIFORNIA
Pennsylvania

A Postal Card Solictor.

Brailey Not Yet Out from Under Cover.

Reports from Ohio indicate that the question "Where did Brailey get the money?" is no nearer solution than it was last week. Attempts to carry matters through the courts, which it is believed will bring out facts having some bearing on this situation, are now under way, but have not progressed to such a stage as to show up anything essential; at the same time suits have been brought with a view to preventing any transfer of interest which would put the Independent long distance lines under control of the Bell telephone company.

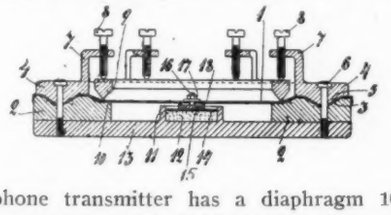
At district meetings, held in Ohio this week, representatives of local companies are expressing their confidence and showing the old time aggressive spirit which was responsible for the original development of their systems.

Telephone Patents

By Max W. Zabel

TELEPHONE TRANSMITTER.

Carl E. Egner, Stockholm, and Johan G. Holmström, Saltsjöstorängen, Sweden, patent 938,992, Nov. 2, 1909.



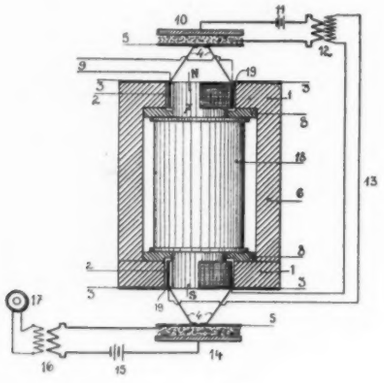
This telephone transmitter has a diaphragm 10, which is of very thin material, and is held between the parts 2 and 4, and in addition, has an annular ring 9, which is screwed in place by means of the set screws 8, and puts the diaphragm under stress. At the central point of the diaphragm a carbon button 14 acts in connection with carbon granules 12. It is claimed that only the vibrations of the diaphragm at its exact center are utilized, and that by reason of the fact that the diaphragm is under stress with substantial uniformity from its center toward its periphery, the transmitter is more sensitive than other forms.

REPEATER.

Anton Pollak, Paris, France, patent 939,625, Nov. 9, 1909.

This repeater consists of a shell 6 having a core 7 which projects into annular openings 19, 19. A coil 18 for energizing purposes is mounted upon the core 7. An air space is left between each end of the core 7 and the shell as shown at 19. In this air space circular coils 2, 2 are placed and held by flexible springs 3, 3. The line wires 9 connect with the upper

coil 2, and when talking currents are passing, move the coil 2 in response thereto. This movement actuates the transmitter 10 through the agency of the arms 4, and this transmitter then actuates the lower coil 2 which thereupon operates the transmitter 14 and the receiver 17. This gives, it is claimed, a double strengthening effect to the talking currents coming in over the line 9.



METHOD OF WIRING TELEPHONE SWITCHBOARDS.

Chas. H. Winston, Chicago, patent 937,909, Oct. 26, 1909, assigned to Kellogg Switchboard & Supply Co., Chicago.

This patent illustrates means whereby the central office switchboard can be wired for magneto-lamp signal service, and contacts brought out to connecting clips in the back of the board. At a later period, when it is desired to change from magneto to common battery, the cord circuit can be so changed without changing any of the wiring, merely by changing the interconnections on the cross connecting clips in the rear of the board.

TELEPHONE ATTACHMENT.

Henry R. Palmer, Seattle, Wash., patent 939,439, Nov. 9, 1909.

This attachment is for use with desk telephones and comprises a vertical bar which is attached to an arm revolubly mounted upon the standard of the desk set. This bar carries the receiver and can be placed in position so that the user need not hold it to his ear. When through the user pushes the receiver back toward the set and thereby operates the switchhook.

LOCKOUT TELEPHONE SYSTEM.

Frank E. Summers, Scotland City, Mo., patent 939,756, Nov. 9, 1909.

This telephone system contemplates the division of a line into as many sections as there are stations, and providing means at each telephone to connect it to either one of the two sections entering each sub-station. Normally the ends of each two adjoining sections are connected together at the sub-station where they enter, and when thus connected the local sub-station telephone is out of service. There are also provided means whereby an auxiliary receiver is connected in circuit, by which parties on the line not in conversation can apprise the users of the line that they are desirous of obtaining emergency service.

APPLIANCE FOR USE WITH TELEPHONE TRANSMITTERS.

Chas. J. Kintner, New York, patent 938,060, Oct. 26, 1909, assigned to Miniature Telephone Booth Co., New York.

This invention is designed to provide a bell-shaped arrangement, which fits over the mouth of the transmitter, and, in fact, encloses the entire transmitter of a desk telephone, and which has a bushed opening into which the user talks, and against which he is supposed to press his face, so that no sounds when talking escape out into the room. Further means of enclosing the desk set base for deadening the sound are provided.

TELEPHONE SYSTEM.

Edward E. Clement, Washington, D. C., patent 939,188, Nov. 2, 1909; assigned to North Electric Company, Cleveland, O.

This system, similarly to the two previous patents, is designed for providing means for interconnecting a plurality of lines, but in the embodiment shown, three keys, K, K^2 and K^3 are used, which step up selector switch S, S', so that an operator, by manipulating the keys, may set up connection between lines, for instance, between the line which has the receiver O, on which a call may come in, and any one of the lines under the control of the relays R, R^2 and R^4, similarly to the method of connection shown in the two previous patents.

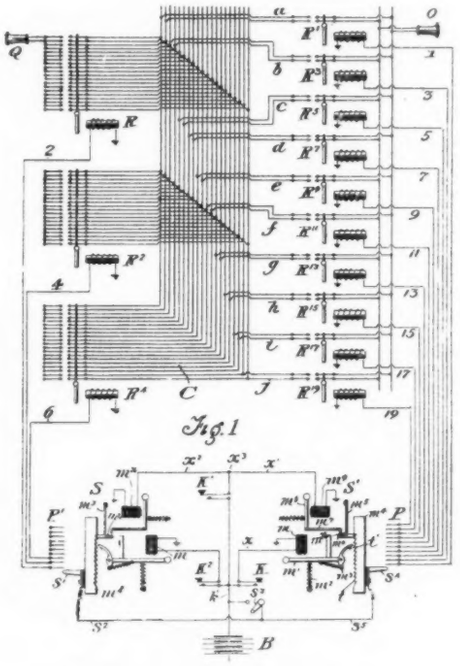


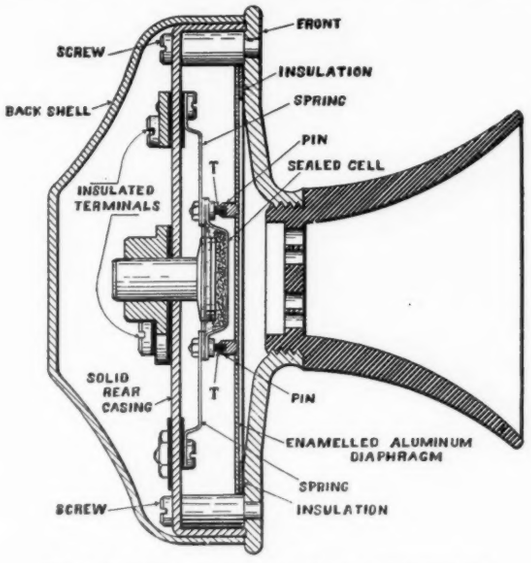
Fig. 1

In the Manufacturing Field

A Four-Piece Transmitter of High Efficiency.

The Mason transmitter, patented April 6, 1909, and manufactured by the Sumter Telephone Manufacturing Company, represents an attempt to produce an instrument of the highest efficiency with the fewest parts. By reference to the accompanying cuts, it will be observed that rubber bands, damping springs with felt tips, fine wires or punched pieces connecting the electrodes with the terminals, etc., have been eliminated, and that the structure really consists of four parts, all of these being comparatively large and heavy. In developing this trans-

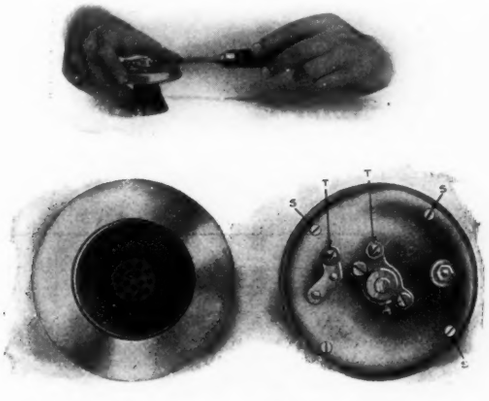
mitter, advantage is taken of the peculiar fact which the Sumter engineers claim to have discovered, that a transmitter diaphragm having two pins or projections located at equidistant points from the center, will vibrate these points more



Cross Section Through the Mason Transmitter.

strongly than if only a single point or connection is used directly in the center of the diaphragm. It is also found that any form of damping spring tends to hamper or reduce the amplitude of the vibrations, but if damping springs are eliminated, annoying side tones and other defects manifest themselves. It was found that these defects could be eliminated by riveting the points, as used in the Mason transmitter, into the diaphragm structure, thereby producing a stress which effectually prevents the side tone which otherwise occurs.

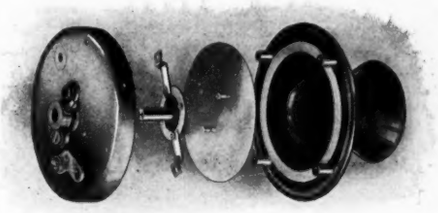
By reference to the accompanying sectional view, it will be seen that the diaphragm is so placed in the instrument that it has no permanent connection with any of the other parts, but is loosely supported with the casing, and may be removed and another one submitted without disturbing the adjustment of the instrument in any way. This marks quite an advance in transmitter construction, as the Sumter company has found that in spite of all protective mediums for the diaphragm it has been able to obtain and apply, they will corrode in actual



Method of Dis-assembling, and Front and Back Views.

service, and their renewal has been necessary after a certain length of time.

The operation of the Mason is somewhat different from other transmitters. When the sound vibrations strike the diaphragm, the latter is set in vibration, which has greater force or amplitude at points beyond the center. These amplified vibrations are transmitted to the two pins unequally, so that the points or ends of the pins have an oscillatory motion, which motion is in turn conveyed to the cell containing the granular carbon. The front, enclosing portion of cell, susceptible to vibration, constitutes the front electrode. The entire cell, together with its supporting springs, being under tension or strain, is peculiarly susceptible to the delicate vibrations received from the pins, and the cell is caused to approach and recede from the rear, or stationary electrode, thereby subjecting the variable



The Four Pieces.

resistance medium, or granular material, to a continual alternation of increases and decreases in pressure which causes a consequent variation in electrical resistance. It will be further observed that the motion imparted to the cell is irregular in character, owing to the pins which are located out of center with respect to the vibrating diaphragm, and also out of center with respect to the cell. Therefore the vibrations transmitted from the main diaphragm, instead of being uniform as in the case of transmitters actuated by a single connection in the center of the main diaphragm, are irregular and uneven, and the consequent variation in the pressure on the granular carbon is claimed to be much greater, and the efficiency correspondingly increased.

The mechanical features embodied in the device are worthy of notice, because they represent an attempt to make a "fool proof" instrument, which is highly desirable, especially for service in small exchanges, where the transmitters must often be installed by those not at all familiar with their construction. The usual bridge is entirely eliminated, its place being taken by a seamless shell of stamped steel, especially enameled. This completely encloses the cell and diaphragm, and owing to the peculiar assembly of the instrument, neither the diaphragm nor the frame is part of the circuit. It is believed that this is the first instrument in which the diaphragm is not electrically connected in some way. It will be observed that the front electrode of this instrument is formed by a platinum faced cup, while the rear electrode is of carbon. The fact that this cell is very light enables it to radiate the heat generated in the granular carbon with great rapidity, and therefore the instrument may be used with several cells of battery without any danger of "frying." This features also makes the instrument

Removing Diaphragm with the Fingers.

particularly well adapted to common battery work, and its makers report that it has met with astonishing success in this field.

Another feature of value is the tendency to automatically cut off the battery flow in case the transmitter is left in circuit, and not in use. The cell is always under tension, being supported by the flat phosphor bronze springs, and it there-

fore has a tendency to expand, thus increasing the distance between the electrodes, and causing an increase in the resistance of the instrument.

In construction, the instrument possesses many desirable features. The front is entirely free from name plates or other useless embellishments. The terminal screws are large and heavy, and as the diaphragm and vital parts are completely enclosed by the rear casing, it is impossible to mash the connecting cords or wires against the diaphragm, and thereby interfere with the operation of the instrument.

As the only difference between the magneto and common battery transmitter is the resistance of the granular carbon, should it ever become necessary to change from magneto to common battery, it is only necessary to take out two screws and remove the magneto cell, substituting therefor the common battery cell. This change can be made with great facility.

Final Step in Disassembling.

Transmitters embodying these features have been tried in actual service for over two years and the reports are highly satisfactory. The Sumter Telephone Manufacturing Company has such confidence in the ability of the instrument to win its way that it is sending samples to exchange managers for examination.

Conducting Tinsel Now Manufactured in America.

Connecticut has long been known as the banner state for metal working. It is a matter of common knowledge that for skill in the handling of copper, brass and ornamental metals, and facilities for producing quantites, Connecticut manufacturers excel.

Now a Connecticut corporation has produced a conducting thread, known to the telephone trade as "Electric Thread." This thread is composed of a cotton cord covered with a copper tinsel ribbon. The J. R. Montgomery Co., of Windsor Locks, Conn., in its novelty yarn department, is now manufacturing this thread, which has successfully met the critical requirements of the makers of cords for telephones, switchboards and medical instruments.

The manufacturer not only spins the cotton for the central cord, but makes the copper tinsel from electrolytic copper, which is guaranteed 98 per cent pure.

The thread is being turned out constantly in large quantities, for an increasing trade, and this peculiar product is to be counted as an important addition to Connecticut's metal working industries.

Tinsel has been manufactured in France and Germany for many years, but until this enterprising Connecticut company undertook making it, it had never been made outside of these two countries. Though tinsel has been used here for years, it has heretofore been imported.

Memphis Wants Up-to-Date Telephone System for Police.

The Memphis Times recently published a strong article dealing with the need for an improvement in the city's police signaling system. It deals at length with the conditions under which prompt response from police officers near any point where their attention is needed should be obtained, but it is not available under the present method of signaling. The Memphis Times came to the conclusion, after investigating the subject, that the only way to remedy the conditions which have led to the escape of criminals after completing mischief in which they might have been interrupted if a proper system had been installed, would be to provide a method of calling patrolmen instantly, from headquarters, while they are on their beats. As is well known in telephone circles, this condition is met by the Flash Light System made and sold by the Dean Electric Company, which was originally invented and installed by R. Max Eaton, president of the Niagara County Home Telephone Company, at North Tonawanda, N. Y.

This system is operated over telephone wires leased from an operating company, and boxes are maintained by telephone men, and so the cost of installing and running it is very low for the city, while at the same time it furnishes a slight revenue for the telephone company as a by-product.

It is gratifying to note how thoroughly this telephone system conforms to the requirements laid down by the Memphis Times.

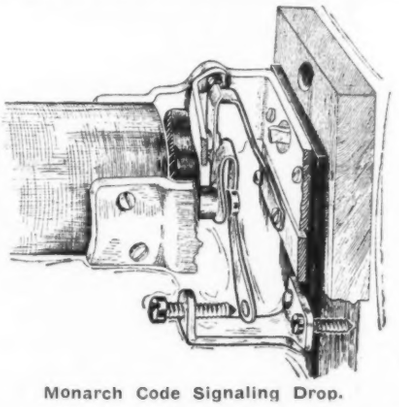
H. H. Gerhard, manager, and E. P. Shoch, chemist, of the C. A. Wood Preserver Company, Austin, Texas, recently spent over three months in Europe, partly as a pleasure trip and partly to discover the latest practice abroad in the use of wood preserver. Mrs. Gerhard accompanied her husband throughout the trip. Visiting Telephony's office shortly after his return, Mr. Gerhard reports a heavy increase in the output of his company.

The North Electric Company of Texas has appointed Mr. D. E. Whipple as secretary and manager of the company. Mr. Whipple retains the management of the Kansas City branch in addition to his duties at Dallas, Texas.

A Big Help to the Operator.

In the new switchboard that is being built for the Woodhull Mutual Switchboard Association, of Woodhull, Ill., the farm lines are to be equipped with drops having a code signaling device. This will enable the operator to know when she is being called, and she will not have to answer when one person is calling another. This feature is shown in the illustration, and it will be seen that it consists of a relay contact attached to the armature in such a way that no extra exertion is required to close the local circuit which contains the bell.

One side of the circuit terminates in the flat spring, which is equipped with a platinum rivet at the point of contact. The other side of the circuit terminates in a screw having a platinum point. This screw furnishes an excellent means of adjustment. When the armature operates the two platinum contacts are brought together, and as the code rings pull up the armature, the bell in the local circuit repeats them.



Monarch Code Signaling Drop.

This feature is one of several that have been developed by the Monarch Telephone Manufacturing Company, and is a great advantage in the operation of magneto exchanges. These features are described in the new magneto catalogue, which has just been issued by that company.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

MR. C. E. MONTGOMERY has resigned his position as manager of the Pilger Telephone Company, at Pilger, and the vacancy was filled by the appointment of G. Freeman.

NEW COMPANIES.

WILLIAMS, ARIZ.—The plant of the Grand Canyon Electric Light & Power Company has been purchased by the Arizona Overland Telephone & Telegraph Company. The purchase includes all the physical equipment of the company.

ARCO, IDAHO.—The Arco Telephone Company has been organized to transact local telephone business. Its capital is $1,500. The directors are John W. Fowler, president and manager; W. G. Sweet, secretary and treasurer; Otto B. Flischer, vice president, and J. E. Smith and M. A. Dillingham. The company will construct lines to farms within 10 miles of Arco.

CARBON CLIFF, ILL.—Organization of the Carbon Cliff Mutual Telephone Company was effected recently. The central office will be situated at Carbon Cliff, and the lines will be run throughout this place and the surrounding territory. Clark Corbin, Sharp Silvis and Ed Wells are the men who are promoting the new organization. A 25-year franchise has been applied for.

TEEGARDEN, IND.—The Marshall and St. Joseph County Mutual Telephone Company is the name of a new corporation. Capital $1,000. Officers are president, C. F. Ruple; secretary, J. S. Davis.

PLEASANT HILL, IA. (Portland Twp.)—Articles of incorporation were filed by the Pleasant Hill Telephone Company of Portland township to conduct a telephone business. Its capital stock is $10,000. The officers are, President, Grant McGowan; vice-president, F. M. Brown; secretary, J. S. Wilcox; treasurer, Henry Siewertsen.

HAYWOOD, KY.—Articles of incorporation were filed for the Haywood Home Telephone Company, with a capital stock of $500. The incorporators are George M. Ellis, S. A. Hawley and George W. Drane.

PULLMAN, MICH.—A new telephone recently incorporated is the Adamsville Telephone Union. The capital stock is $10,000. L. E. Woodan of Cassopolis is one of the principal stockholders.

FREEBORN, MINN.—The Freeborn Telephone Exchange was incorporated recently, with a capital stock of $5,000, by Fred Feine, A. E. Gilmore and J. B. Purdue.

SPRINGFIELD, MINN.—Preliminary steps have been taken for the organization of the Redwood County Long Distance Telephone Company, which is to be capitalized at $10,000. The officers of the new company are A. O. Gimmestad, president; A. D. Stewart, vice-president; Geo. L. Evans, secretary; L. Lindeman, treasurer; A. O. Gimmestad,, A. D. Schwart, Geo. L. Evans and L. Lindeman and Andrew Olson, directors. This company was organized owing to dissatisfactory relations with the company perating in that section.

TINTAH, MINN.—The Tintah Telephone Company was organized with a capital of $10,000; incorporators are, G. W. Mace, J. R. Davidson, M. E. Doleman, J. P. Dahlquist and others.

ALBANY, N. Y.—The Citizens' Home Telephone Company, of Walton, Delaware county, was incorporated with a capital of $100,000. The company is to operate in the counties of Delaware, Boone, Otsego, Chenango, Greene, Schoharie, Ulster and Sullivan. The directors include George O. Mead, of Walton; Theodore M. Brush, and Irving H. Griswold, of Elyria, Ohio; Irving R. Goughley and George H. Rymers, of Albany.

GRADY, OKLA.—M. B. Grayson of Oscar, J. W. Dunford and A. G. Cranfield of Grady, are the incorporators of the Grady Telephone Company. Capital $1,000.

PHILADELPHIA, PA.—A new Independent telephone company has been organized by 50 business men of Montgomery county, Pa., to be known as the Perkiomen Telephone & Telegraph Company. A. S. Schantz, of East Greenville, is president, and E. W. Scholl, of Pennsburg, is secretary.

MART, TEX.—A new company recently incorporated in Texas is the Limestone Telephone Company of Mart. The Capital of the company is $4,500, and the incorporators are Richard Blackwood, R. F. King and F. B. Moore.

SAN ANTONIO, TEX.—The board of county commissioners of Bexar county has granted the petition of the Farmers' Independent Telephone Company for right of way and privilege to construct a rural telephone line through certain parts of this county. John M. Melcher is president of the company; August G. Bippert, secretary, and Emil F. Bippert, treasurer. Its principal office is in San Antonio.

OKANOGAN, WASH.—Articles of incorporation have been filed for the Okanogan Telephone & Telegraph Company, whose object is to put in a telephone system for the town of Okanogan and eventually extend it to the rural districts about this place. Trustees of the company are C. E. Hansen, Harry J. Kerr, Ira Freer, F. H. owne and Chris Pein. The line will be installed immediately.

CHARLESTON, W. VA.—The Consolidated Telephone & Telegraph Company, of New York, was incorporated here to own and operate lines in the United States and Canada, with a capital stock of $25,000. The incorporators are: S. N. Noyes, J. M. Ritz, A. B. Woodruff, J. H. Klieves and Edgar Charnock, all of Wheeling.

MADISON, WIS.—On application the Railway Commission authorized the Bloomer Telephone Company to raise its rates for residence telephones.

MARSHFIELD, WIS.—A new directory has been issued by the Marshfield Telephone Exchange, which gives credit to the efforts of the company.

FINANCIAL.

SEYMOUR, IND.—The Seymour Mutual Telephone Company issued its first yearly dividend of 6 per cent. This company was organized about a year ago by the Merchants' Association, and has been expanding extensively and rapidly. In addition to the dividend a goodly sum was apportioned as a sinking fund.

POMEROY, IA.—The stockholders of the Pomeroy-Palmer Mutual Telephone Company have increased their capital stock from $10,000 to $20,000.

CLEVELAND, O.—The regular quarterly dividend of 1½ per cent was paid on the preferred stock by the Cuyahoga Telephone Company.

FRANCHISES.

KERKHOVEN, MINN.—The Kerkhoven Telephone Company has been granted a franchise to construct and maintain a telephone system in this place.

NEWPORT, OHIO.—After a two years' controversy on the granting of a franchise to the Citizens' Telephone Company in Newport, the matter was brought up and closed at a recent meeting of the aldermen, the vote being 3 to 2 in favor of the granting of the franchise.

CONSTRUCTION.

PEORIA, ILL.—The Citizens Telephone Company has been doing much toward giving the subscribers the best of service. A new switchboard has been installed and the lines generally improved.

FORT WAYNE, IND.—The Home Telephone and Telegraph Company has been awarded contracts for the installation of private branch exchanges by the following: Indiana Furniture Company, Fort Wayne Box Company, Indiana Inspection Bureau, Ballou & Hoffman, St. Joseph's hospital, W. K. Noble, Fort Wayne Drug Company, Lincoln National Life, and First National bank. It is also reported that about 100 telephones will be installed in the Shoaff Bldg.

LAKE CITY, IA.—The Central Mutual Telephone Company has purchased property and will soon begin the construction of a brick business block for the exchange.

GRAND LEDGE, MICH.—The Grand Ledge Telephone Company has been doing considerable work in the past few months. This company was organized about eighteen months ago with a capital of $10,000 and 231 subscribers, and owned 1700 feet of cable. Now the company is capitalized at $50,000, and 60,000 feet of cable has been stretched, while the list of subscribers has passed the 800 mark.

STEPHEN, MINN.—Mr. R. J. McMahan, manager of the McMahan Telephone Company has been spending some time in Thief River Falls where the company is having a line built to connect with Warroad. He reports that over six miles of new poles have already been put in and that work is being pushed rapidly.

SPRINGFIELD, MO.—The Frisco is expending in the neighborhood of $300,000 for the installation of telephone service for despatching its trains between Springfield and Kansas Cty, Fort Scott, Monett, Thayer, St. Louis and Emery, Miss., and Birmingham, Ala.

JUDITH GAP, MONT.—The Melstone Telephone Company of Melstone is constructing a local exchange system. There will be 25 telephones to start with. It is expected that some rural lines will be built in the near future.

At the Editor's Desk

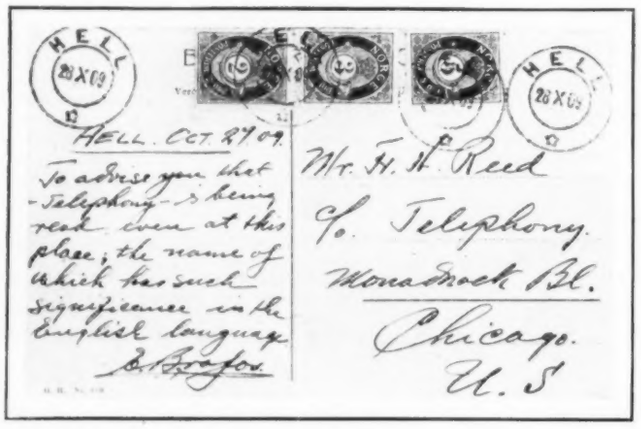
Readers who have been wondering why some of our advertisers have been dwelling so heavily on the ability of their equipment to stand *all* climatic conditions will find the key in the postal here reproduced. It will be observed that many roads lead to this place from divergent directions, making it easy to get there—so the views are undoubtedly authentic. We hasten, now, to assure our readers that our very good friend, Mr. Brofos, is no less noted for his upright character than his ability as a progressive young engineer, and no fears for his personal well-being need be entertained.

In these days we are realizing what it means to live up to our responsibilities. The other climatic extreme is represented in our advertising pages by protective devices installed and operating in the North Polar regions—to say nothing of the important discovery that the Pole was tied down with American anchors—enough to hold the extraordinary sleet loads occurring in that locality, which was duly recorded in our advertising pages.

Talking about responsibilities—since we are supposed to be face to face at the Editor's desk, and can speak freely—how do you think we are taking care of your interest in the important telephone news of the day? This is a kind of responsibility that we are not slighting, even though the technical, business, and practical operating sections are constantly being strengthened by contributions from the best men in the field.

Last week, you know, we "scooped" the daily press on the news of the merger of the A. T. & T. and Western Union. Although we had traced this far enough to be confident that the report was authentic at an earlier date, it was impossible to mail the issue until Thursday morning. But that was five days and a half ahead of the big dailies even of New York and Boston. And the story, you recall, was correct—even to the plan to make Mr. Baker general manager of the Western Union.

Do you realize what it means to beat the big dailies of the country, with their tremendous facilities for gathering news, on the story of a billion dollar corporation—and get the news into the hands of our readers all over the country before the dailies print a line?



The Postmark.

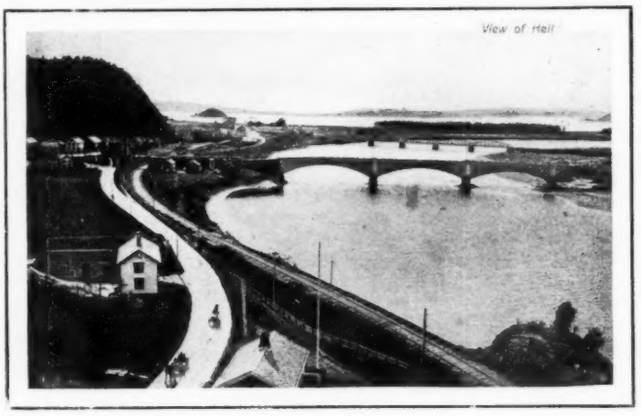
Perhaps we forced the Bell out from under cover, or the dailies wouldn't have had the story.

As a reader of TELEPHONY you had advance news—ahead of all other sources of printed information—of the Kellogg-Dean merger project.

Ours was the first reliable report of the Ohio situation.

The many of you who visit our editorial office in Chicago, and see that we always have time for a chat with a friend of the paper, usually get around to asking how we do it.

Co-operation is the word. Our trained, alert news gatherers are on the job, day and night, in all parts of the country—some abroad, too. But back of all are the men who are actually doing things for the good of the industry.



The Scenery.

We have demonstrated our journalistic integrity by refusing to print gossip and surmises. A responsible source must be behind news before it gets into print in TELEPHONY. A man who gave a false report, to be printed to further his personal advantage, would never get another line into the paper.

And there are no leaks, or premature explosions in the office. A man is safe in sending on an advance report, to be printed when plans are executed, even though he knows that premature publication would be fatal to their success. This policy, too, assures readers that news will be *correct.* The result of this fundamental feature of our policy has been that all important items are sent to the Editor's desk by the men who know, long before the newspapers hear of what is going on. Anyone who has a message to the Independent telephone companies is sure of prompt and hearty co-operation, and that his message will reach all of the great body of interested workers in the field. So each issue represents the co-operative effort of dozens of men—mostly outside our office, doing the actual work of developing the industry. Our part is a small one—that of supplying a medium for the interchange of information.

There is another very important feature of TELEPHONY, which has appealed strongly to our readers—our Condensed News Reports. The value of these pages would be missed by the casual observer, but to the men on the firing line every item is of interest and value. These pages include the new companies, franchises granted or pending, underground and overhead construction, election of officers, annual meetings, increases of capital stock, personals, financial items and miscellaneous information. In the course of a year there are over three thousand separate items, which tell of the progress and development of the Independent telephone industry. These news notes are received from every state in the Union, and the method of gathering this information is thorough. In the first place the new incorporations are received direct from the state capitals, the franchises are reported by our corps of correspondents in every important center. The press clippings services supplied TELEPHONY represent the clippings from practically every important center. The press clippings services suption from hundreds of telephone companies monthly. It will be seen from the above that this service is accurate, complete, and its value is attested by the many complimentary letters received.